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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-K

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

For the fiscal year ended December 31, 2020

OR

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

For the transition period from _____ to _____

Commission File Number 001-33038

ZIOPHARM Oncology, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware **(State or Other Jurisdiction of Incorporation or Organization)**	**84-1475642** **(IRS Employer Identification No.)**
One First Avenue, Parris Building 34, Navy Yard Plaza **Boston, Massachusetts** **(Address of Principal Executive Offices)**	**02129** **(Zip Code)**

(617) 259-1970
(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	**ZIOP**	**The Nasdaq Stock Market LLC**

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

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

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T 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 or a smaller reporting company. See definition of "large accelerated filer," "accelerate filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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 registrant's common stock held by non-affiliates was $687,342,598 as of June 30, 2020 (the last business day of the registrant's most recently completed second fiscal quarter), based on a total of 209,555,670 shares of common stock held by non-affiliates and a closing price of $3.28 as reported on the Nasdaq Global Select on June 30, 2020. For purposes of this computation, all officers, directors, and 10% beneficial owners of the registrant are deemed to be affiliates. Such determination should not be deemed to be an admission that such officers, directors or 10% beneficial owners are, in fact, affiliates of the registrant.

As of February 24, 2021, there were 214,667,023 shares of the registrant's common stock, $0.001 par value per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE:

Portions of the definitive proxy statement for the registrant's 2021 annual meeting of stockholders, which is to be filed within 120 days after the end of the fiscal year ended December 31, 2020, are incorporated by reference into Part III of this Form 10-K, to the extent described in Part III.

ZIOPHARM Oncology, Inc.
ANNUAL REPORT ON FORM 10-K
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2018

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Special Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K, or Annual Report, contains forward-looking statements that are based on management's current beliefs and assumptions and on information currently available to management. All statements other than statements of historical facts contained in this Annual Report are forward-looking statements. In some cases, you can identify forward-looking statements by words such as: "anticipate," "believe," "estimate," "expect," "forecast," "intend," "may," "plan," "project," "target," "will" and other words and terms of similar meaning.

These statements involve risks, uncertainties and other factors that may cause actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this Annual Report, we caution you that these statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain. Forward-looking statements in this Annual Report include, but are not limited to, statements about:

- our ability to raise substantial additional capital to fund our planned operations;
- estimates regarding our expenses, use of cash, timing of future cash needs and anticipated capital requirements;
- the development of our product candidates, including statements regarding the initiation, timing, progress and results of our preclinical clinical studies, clinical trials and research and development programs;
- our ability to advance our product candidates through various stages of development, especially through pivotal safety and efficacy trials;
- the risk that final trial data may not support interim analysis of the viability of our product candidates;
- our expectation regarding the safety and efficacy of our product candidates;
- the timing, scope or likelihood of regulatory filings and approvals from the U.S. Food and Drug Administration or equivalent foreign regulatory agencies for our product candidates and for which indications;
- our ability to license additional intellectual property relating to our product candidates from third parties and to comply with our existing license agreements;
- our ability to enter into partnerships or strategic collaboration agreements and our ability to achieve the results and potential benefits contemplated from relationships with collaborators;

- our ability to maintain and establish collaborations and licenses;
- our expectation of developments and projections relating to competition from other pharmaceutical and biotechnology companies or our industry;
- our estimates regarding the potential market opportunity for our product candidates;
- the anticipated rate and degree of commercial scope and potential, as well as market acceptance of our product candidates for any indication, if approved;
- the anticipated amount, timing and accounting of contract liability (formerly deferred revenue), milestones and other payments under licensing, collaboration or acquisition agreements, research and development costs and other expenses;
- our intellectual property position, including the strength and enforceability of our intellectual property rights;
- our ability to attract and retain qualified employees and key personnel;

- our expectations regarding the impact of the ongoing coronavirus disease 2019, or COVID-19, pandemic, included the expected duration of disruption and immediate and long-term impact and effect on our business and operations;
- the diversion of healthcare resources away from the conduct of clinical trials as a result of the ongoing COVID-19 pandemic, including the diversion of hospitals serving as our clinical trial sites and hospital staff and principal investigators supporting the conduct of our clinical trials;
- the interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel, quarantines or social distancing protocols imposed or recommended by federal or state governments, employers and others in connection with the ongoing COVID-19 pandemic; and
- other risks and uncertainties, including those listed under Part I, Item 1A, “Risk Factors”.

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 described 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.

Unless the context requires otherwise, references in this Annual Report to “Ziopharm,” the “Company,” “we,” “us” and “our” refer to Ziopharm Oncology, Inc., and its subsidiaries.

SUMMARY OF SELECTED RISKS ASSOCIATED WITH OUR BUSINESS

Our business faces significant risks and uncertainties. If any of the following risks are realized, our business, financial condition and results of operations could be materially and adversely affected. You should carefully review and consider the full discussion of our risk factors in the section titled “Risk Factors” in Part I, Item 1A of this Annual Report. Some of the more significant risks include the following:

- Our business, operations and clinical development plans and timelines could be adversely affected by the effects of health epidemics, including the COVID-19 pandemic, on the manufacturing, clinical trial and other business activities performed by us or by third parties with whom we conduct business, including our contract manufacturers, clinical research organizations, or CROs, shippers and others.
- We will require substantial additional financial resources to continue ongoing development of our product candidates and pursue our business objectives; if we are unable to obtain these additional resources when needed, we may be forced to delay or discontinue our planned operations, including clinical testing of our product candidates.
- Our plans to develop and commercialize non-viral and viral adoptive cellular therapies based on engineered cytokines and CAR T-cell as well as TCR therapies can be considered as new approaches to cancer treatment, the successful development of which is subject to significant challenges.
- Our current product candidates are based on novel technologies and are supported by limited clinical data and we cannot assure you that our current and planned clinical trials will produce data that supports regulatory approval of one or more of these product candidates.
- If we are unable to obtain the necessary U.S. or worldwide regulatory approvals to commercialize any product candidate, our business will suffer.
- Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit a BLA to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business.
- Our cell-based and gene therapy immuno-oncology products rely on the availability of reagents, specialized equipment, and other specialty materials and infrastructure, which may not be available to us on acceptable terms or at all. For some of these reagents, equipment, and materials, we rely or may rely on sole source vendors or a limited number of vendors, which could impair our ability to manufacture and supply our products.
- Our immuno-oncology product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Currently, few gene therapy and cell therapy products have been approved in the United States and Europe.
- Our reliance on third parties to formulate and manufacture our product candidates exposes us to a number of risks that may delay the development, regulatory approval and commercialization of our products or result in higher product costs.
- If we are unable either to create sales, marketing and distribution capabilities or enter into agreements with third parties to perform these functions, we will be unable to commercialize our product candidates successfully.
- Our immuno-oncology product candidates may face competition in the future from biosimilars.
- If we or our licensors fail to adequately protect or enforce our intellectual property rights or secure rights to patents of others, the value of our intellectual property rights would diminish and our ability to successfully commercialize our products may be impaired.
- Our stock price has been, and may continue to be, volatile.
- We previously identified a material weakness in our internal control over financial reporting for the year ended December 31, 2019, which we believe has been fully remediated. If we have inadequately remediated this material weakness, or we otherwise fail to develop, implement and maintain an effective system of internal controls in future periods, our ability to report our financial condition or results of operations could be adversely affected and may result in material misstatements of our financial statements or could have a material adverse effect on our business and trading price of our securities.

PART I

Item 1. Business

BUSINESS OVERVIEW

We are a clinical-stage biopharmaceutical company focused on discovering, developing and commercializing next generation immuno-oncology platforms that leverage cell- and gene-based therapies to treat patients with cancer. We are developing platform technologies that utilize the immune system by employing innovative cell engineering and novel, controlled gene expression technologies designed to deliver safe and effective, cell and gene therapies for the treatment of multiple cancer types. Our major platform and priority is referred to as *Sleeping Beauty* and is based on the non-viral genetic engineering of immune cells using a transposon/transposase system that is intended to stably engineer T cells outside of the body for subsequent infusion. Our second platform is referred to as Controlled IL-12 and is designed to stimulate expression of interleukin 12, or IL-12, a master regulator of the immune system, in a controlled manner to focus the patient's immune system to more effectively attack cancer cells.

Using our *Sleeping Beauty* platform, we are developing T cell receptor, or TCR, T cell therapies to target neoantigens in solid tumors using two approaches, which we refer to as our "Library TCR-T Approach" and "our Personalized TCR-T Approach." The Library TCR-T Approach uses third-party (allogeneic) TCRs that have been prepared before the recipient has been identified to genetically modify patient-derived T cells to redirect specificity to public, or shared neoantigens. The Personalized TCR-T Approach uses patient-derived (autologous) TCRs that are prepared from the recipient to genetically modify patient-derived T cells to redirect specificity to private neoantigens. It is anticipated that more than one TCR-T product with more than one specificity will be administered in the Personalized TCR-T Approach. In February 2021, the U.S. Food and Drug Administration, or the FDA, cleared our company-sponsored investigational new drug, or IND, application submitted for a Phase 1/2 clinical trial evaluating TCRs from our library for the investigational treatment of lung, cholangiocarcinoma, pancreatic, colorectal and gynecological cancers. Initially, six curated TCRs reactive to mutated KRAS and TP53 will be included in the clinical trial: however, we expect to expand the number of TCRs to be evaluated in our clinical trial. This clinical trial is being conducted in collaboration with The University of Texas MD Anderson Cancer Center, or MD Anderson, which will be the first site for the clinical trial.

Under our Cooperative Research and Development Agreement, the National Cancer Institute, or NCI, is conducting a Phase 2 Personalized TCR-T clinical trial to evaluate autologous peripheral blood lymphocytes genetically modified with the *Sleeping Beauty* system to express private neoantigen-specific TCRs. The trial is designed to enroll patients with a broad range of solid tumors. The FDA has cleared the IND application submitted by the NCI for this clinical trial. However, enrollment in this clinical trial has been temporarily suspended due to issues internal to NCI and unrelated to our technology. The progress and timeline for this trial, including the timeline for dosing patients, are under the control of the NCI.

We are developing chimeric antigen receptor, or CAR, T cell, or CAR^+ T, therapies targeting CD19 on malignant B cells using our *Sleeping Beauty* platform. We are advancing our so-called rapid personalized manufacture, or RPM, technology, in Greater China with Eden BioCell, Ltd., or Eden BioCell, our joint venture with TriArm Therapeutics, Ltd. RPM enables small numbers of T cells to be infused as soon as the day after gene transfer which is made possible by the genetic modification of resting T cells to express CAR and membrane bound IL-15, or mbIL15. Eden BioCell is leading the clinical development and commercialization of *Sleeping Beauty*-generated CD19-specific RPM CAR^+ T therapies using patient-derived (autologous) T cells in order to treat patients with relapsed or refractory $CD19^+$ leukemias and lymphomas. In the fourth quarter of 2020, an IND was cleared by the Taiwan FDA for a Phase 1 clinical trial designed to evaluate safety and efficacy in this patient group. In our Phase 1 clinical trial being conducted in the United States, we plan to infuse donor-derived T cells after allogeneic bone marrow transplantation, or BMT, for recipients who have relapsed with $CD19^+$ leukemias and lymphomas with our CD19-specific CAR^+ T therapies manufactured using our technology.

Our Controlled IL-12 platform is based on an engineered replication-incompetent adenovirus, referred to as Ad-RTS-hIL-12, plus veledimex as a gene delivery system to conditionally produce IL-12, a potent, naturally occurring anti-cancer protein, to treat patients with solid tumors.
Our Controlled IL-12 platform allows us to deliver IL-12 in a tunable dose as the cytokine is under transcriptional control of the RheoSwitch Therapeutic System® (RTS®). We have completed enrollment to all our Phase 1 and 2 clinical trials of patients with recurrent glioblastoma multiforme, or rGBM. These trials examine the effect of Controlled IL-12 as a monotherapy and in combination with blockade of the immune checkpoint protein PD-1. Dosing is ongoing in a Phase 2 clinical trial evaluating Ad-RTS-hIL-12 plus veledimex in combination with PD-1 antibody Libtayo® (cemiplimab-rwlc) for the treatment of recurrent or progressive glioblastoma multiforme in adults. Data from our monotherapy and combination studies have been presented at major scientific conferences.

OUR STRATEGY

Our goal is to be an innovative immuno-oncology company that delivers safe and effective therapies that provide clinically transformative benefit for patients and long-term value for shareholders. Key elements of our strategy include:

- *Building an end-to-end TCR solution targeting solid tumors.* We intend to build and strengthen our position in the field of T cell targeting solid tumors by investing significantly to optimize and expand our process development and manufacturing capabilities, creating an end-to-end, scalable solution. We intend to build this end-to-end solution to develop treatments using (i) TCR^+ T cells expressing third party (allogeneic) TCRs from a library, which we refer to as our Library TCR-T Approach and (ii) TCR^+ T cells expressing recipient-derived (autologous) TCRs, which we refer to as our Personalized TCR-T Approach. We plan to expand our library of allogeneic TCRs from internal research and third parties that target mutated KRAS, TP53 and EGFR pan-cancer neoantigens as a key part of our commitment to advance clinical development for the treatment of patients whose solid tumors have driver mutations.
- *Advancing our third generation CD19 CAR^+ T program.* We believe our CD19 CAR^+ T therapies may help address the manufacturing and economic challenges of other CAR^+ T programs. Our CAR^+T program targeting CD19 on malignant B cells was initially developed in collaboration with MD Anderson in the United States and will be increasingly led by Eden BioCell in Greater China.
- *Executing on the clinical trials of our Controlled IL-12 platform as both a monotherapy and in combination with immune checkpoint inhibitors.* In our clinical trials, we have observed that Controlled IL-12 increases T cell activity in the tumor microenvironment in patients with rGBM and we will continue exploring partnership opportunities to continue developing Controlled IL-12 in GBM and other tumor types.
- *Delivering shareholder value through strategic business development and disciplined prioritization of our capital resources.* As our programs advance to trials with potentially higher investment required, we will prioritize across our programs to ensure our capital resources are deployed in the optimal manner. In addition, where appropriate, we will seek and execute value-delivering partnerships with other companies. Partnerships are also a potentially important source of technology and innovation. We will seek scientifically focused collaborations that can further enhance our in-house capabilities and technologies.

SLEEPING BEAUTY PLATFORM TECHNOLOGY

We are pursuing non-viral genetic engineering technologies to develop two distinct therapies: addressing solid tumors via novel neoantigen-specific TCR^+ T therapies and addressing hematological cancers via CD19-specific CAR^+ T therapies. The platform we have licensed from MD Anderson uses the *Sleeping Beauty* non-viral genetic modification system to generate and characterize both TCR and CAR designs in T cells.

Limitations of Existing Approaches to Manufacturing T Cell Therapies

In recent years, companies have begun developing and commercializing therapies that include T cells engineered specifically for each patient, utilizing a viral vector. Manufacturing such products is typically undertaken at a centralized facility. The production time varies and typically takes many weeks with additional time needed for quality control. Manufacturing based on viral technology to express TCR or CAR has many challenges:

- *Scalability*. The requirement to be able to timely express a multitude of TCRs, whether to neoantigens unique to patients or neoantigens shared between patients, will be a challenge when the choice of gene transfer for TCR is based on virus.
- *Time to manufacture*. The need to propagate (numerically expand) T cells requires the product be in culture in compliance with current good manufacturing practice (cGMP) during which the intended recipient may be unable to receive the genetically modified T cells.
- *Expense of production*. The need to generate virus and the production time with the associated logistical complications increase the cost of manufacturing the genetically modified T cells.
- *Required lymphodepletion.* The infusion of T cells that have been propagated *ex vivo*, or outside the body, tends to make them dependent on cytokines to survive and thrive after infusion. This requirement has resulted in the use of chemotherapy and other approaches of immunosuppression to "free up" pro-survival cytokines, such as naturally occurring (endogenous) IL-15, in the recipient prior to the administration of T cells. Lymphodepletion facilitates the sustained persistence of genetically modified T cells in the patient, but it exposes the patient to medical complications, raises expense, and limits the ability of the technology to be scaled as the administration of chemotherapy requires specialized centers.
- *Toxicity*. Infusing large numbers of T cells recognizing a single antigen, such as CD19, commonly places the recipient at risk from the synchronous activation of these T cells resulting in cytokine release syndrome and other associated toxicities, which can be severe and life threatening.

We believe these disadvantages will slow the development of clinically-effective and commercially-viable TCR therapies and continue to limit the long-term commercial potential of currently available CAR-T therapies.

Sleeping Beauty Solution

The *Sleeping Beauty* system is a gene transfer method that utilizes a transposase enzyme to "cut and paste" donor transposon DNA from introduced plasmid into chromosomes using a process called transposition. The system can be used to stably deliver genes to a variety of cell types including human T cells. *Sleeping Beauty* transposons appear to integrate in a random distribution at thymine-adenine, or TA, dinucleotide sites, making them less likely to cause off-target effects when compared to other transposons and viral gene delivery methods.

We use the *Sleeping Beauty* system to express TCRs that target patients' neoantigens as well as CARs that enable a T cell to recognize specific proteins or antigens that are present on the surface of other cells. Our RPM technology is used in our third generation CAR^+ T therapy, which uses the *Sleeping Beauty* system to co-express our proprietary mbIL15 and a kill switch along with the CAR, and we may elect to incorporate our mbIL15 technology in our TCR therapies in the future. Interleukin 15 (IL-15) may have a variety of beneficial effects as it is considered a pro-survival cytokine that promotes survival of T cells. Our pre-clinical data suggest that incorporating mbIL15 into TCR and CAR^+ T therapies enhances *in vivo* persistence of the TCR and CAR^+ T cells.

We believe our *Sleeping Beauty* platform has several advantages compared with the viral gene transfer technologies used by other TCR and CAR-T companies:

- *Reduced costs.* By using DNA plasmid and avoiding the time-consuming and laborious manufacture of virus, our *Sleeping Beauty* technology may reduce the manufacturing expense and challenges associated with viral gene transfer systems in creating T cells engineered to express TCR and CAR.

- *Shortened manufacturing*. We expect the T cell manufacturing process with *Sleeping Beauty* to significantly reduce virus-based manufacturing times. In the clinical setting, the time to administration of *Sleeping Beauty*-modified CAR^+ T cells expressing mbIL15 and a kill switch has been shortened to two days or less from gene transfer, including time to release the product for infusion. This reduction in time is primarily achieved through the elimination of *in vitro* T cell activation and propagation which avoids the need to culture T cells, which can take between approximately two and four weeks.
- *Customizable therapies.* Our *Sleeping Beauty* platform may allow us to manufacture more customizable therapies. This enables a library of TCRs to be assembled and used that recognize diverse mutations within shared neoantigens and address a multitude of human leukocyte antigen, or HLA types. This enables personalized TCR-T therapies against unique, and potentially multiple, private neoantigens.
- *Potential improved safety profile.* We expect that including mbIL15 will enable the T cells in our TCR^+ T or CAR^+ T therapies to engraft from low starting (infusion) numbers. We believe this reduced T cell dose may reduce the side effects caused by cytokine release syndrome, which is often experienced by patients receiving larger infusions of TCR^+ T or CAR^+ T cells.
- *Potential to avoid lymphodepletion.* The addition of our proprietary mbIL15 may enable the administration of TCR- or CAR-expressing "younger" T cells with an ability to be long-lived after infusion. The ability of TCR or CAR^+ T cells to signal via mbIL15 increases TCR or CAR persistence and has the potential to eliminate lymphodepletion as the T cells rely on their own source of this pro-survival cytokine rather than scavenging endogenous soluble IL-15 from the recipient.

SLEEPING BEAUTY TCR PROGRAM

Background

Each T cell has a unique alpha/beta TCR and an ability to rapidly increase in numbers when the TCR interrogates a target and detects a threat. A TCR can recognize cancer cells as a threat as the receptor docks with a specialized set of molecules on the cancer cell surface called the HLA system, which is also referred to as the major histocompatibility complex, or MHC. The HLA system reveals the health of a cell based on the loading of peptides (processed protein), which then await examination by unique TCRs on populations of T cells. Two types of HLA molecules, Class I and Class II, are interrogated by TCRs on T cells. Class I molecules activate $CD8^+$ T cells which have evolved an ability to be efficient killers. Class II molecules activate $CD4^+$ T cells which help coordinate an efficient immune response. In each person, there are both many different TCR structures and many different HLA structures. TCRs within each person are adapted to work with their own HLA structures or alleles. For a T cell to recognize and destroy a tumor cell, the TCR must recognize the foreign antigen in the context of HLA and then be activated to deepen the engagement to kill the cell. This is different from CARs, which directly recognize antigens, such as CD19, such as on the surface of malignant B cells, without the need for presentation by HLA.

Genes in cancer cells can lead to the production of proteins, which are then processed by the cell into protein fragments known as peptides. When these peptides are presented to T cells by HLA, by either tumor cells or antigen presenting cells, and they result in T cell activation, they are known as antigens. When these immunogenic peptides are derived from proteins which are in turn expressed from genes that are mutated only in tumor cells (for example, within the cancer genome and not encoded in the germline), they are known as neoantigens. Tumor cells presenting neoantigens via HLA are targets for T cells. T cells can recognize and kill neoantigen-presenting cancer cells and effect a positive feedback loop to heighten the immune response.

In general, the immune system avoids targeting the body's own healthy cells principally through processes known as immune tolerance by which T cells do not respond to HLA containing peptides from normal proteins and therefore avoid targeting healthy cells for destruction. The recognition by the TCR of peptide presented by the HLA system is a vital immune mechanism that allows the body both to respond against foreign threats, including cancer, as well as to avoid targeting the body's own healthy cells.

Tumors utilize a variety of strategies to evade and suppress the host immune system. This renders T cells residing within the tumor, referred to as tumor-infiltrating lymphocytes, or TIL, ineffective and, despite expressing tumor-specific TCRs, unable to recycle their effector functions to eliminate tumor. To overcome immune suppression, "young" T cells are likely needed, such as those found in the peripheral blood. However, these circulating T cells do not typically express tumor-specific TCRs in adequate numbers. We seek to address this problem by genetically modifying peripheral blood-derived T cells to express TCRs with specificity to tumor-derived antigens, especially neoantigens, and propagating them to sufficient numbers prior to administration.

Neoantigens are encoded by tumor-specific mutated genes that are often unique to each patient. Targeting these neoantigens requires TCRs that are generated on a patient-by-patient basis. During cancer initiation and progression, tumor cells acquire mutations in naturally occurring genes that are responsible for transformation, known as driver mutations. Some of these driver mutations occur in "hotspots" and are a class of mutations shared between tumor types and between individuals. Since driver mutations can be anticipated, it is possible to prepare TCRs in a library in advance of a patient's need.

Our Approach to Targeting Neoantigens

Using our *Sleeping Beauty* non-viral platform, we are developing TCR$^+$ T therapies to target solid tumors. Our TCR program designs and manufactures T cells that are intended to target tumor-specific neoantigens, thereby delivering personalized therapy that can attack an individual patient's cancer.

To be successful, genetically modified T cells targeting one or more neoantigens will likely need to address the fact that (1) among a population of patients, not all tumors express the targeted neoantigen, referred to as inter-tumor heterogeneity, and (2) within a single patient, not all tumor cells express the targeted antigen, referred to as intra-tumor heterogeneity. Inter-tumor heterogeneity limits the number of recipients that are eligible to receive a treatment and intra-tumor heterogeneity creates the risk of antigen-escape variants, increasing the likelihood of cancer relapse. As a result, we believe companies developing T cell therapies targeting neoantigens must address both inter- and intra-tumor heterogeneity. The *Sleeping Beauty* system uses DNA plasmids to reprogram T cells to express introduced TCRs on a patient-by-patient basis, which helps address inter-tumor heterogeneity, and to express more than one TCR for each patient and/or to target driver mutations, which helps address intra-tumor heterogeneity.

The genetic modification using the *Sleeping Beauty* system of recipient-derived products enables us to target neoantigens in two ways, which we refer to as our Library TCR-T Approach and as our Personalized TCR-T Approach. We believe we are the only company that is using non-viral gene transfer to develop both personalized TCR$^+$ T therapies and TCR$^+$ T therapies from a library of TCRs derived from internal research and third parties. We believe using the *Sleeping Beauty* system to scale TCR-T to infuse multiple products per patient and develop a library of TCRs to facilitate the recruitment of patients is a competitive advantage.

Library TCR-T Approach

Our Library TCR-T Approach is based on the finding that subsets of neoantigens are shared between patients and between classes of tumors. These neoantigens can be considered as "drivers" for tumor formation. These neoantigens are referred to as "hotspots" and their presence allows us to potentially administer TCR+ T cells expressing TCRs from a library derived from internal research and third parties. The advantage of the Library TCR-T Approach is that subsets of patients with solid tumors may be rapidly treated based on screening them for targeted neoantigens (e.g., KRAS, TP53), identifying patient HLA, and matching these two data sets to the TCRs in the library. Once a match has been identified, the TCR is introduced into peripheral blood-derived T cells using the Sleeping Beauty system, propagated to clinically sufficient numbers and then infused into the patient. We have in-licensed from the NCI multiple allogeneic TCRs derived from third parties that are reactive to mutated KRAS, TP53 and EGFR in hotspots and we plan to expand our TCR library as part of our commitment to advance clinical development for the treatment of patients whose solid tumors have driver mutations.

Personalized TCR-T Approach

Most neoantigens are unique to each patient's tumor. We plan to address this uniqueness in our Personalized TCR-T Approach by infusing TCR^+ T cells expressing recipient-derived TCRs. There are three essential steps in creating a T cell therapy targeting personalized neoantigens:

1. *Detecting and prioritizing neoantigens*. Detecting a patient's unique set of neoantigens usually requires one or more samples of the patient's malignant tissue(s) and sampling of normal cells, followed by sequencing to reveal a catalog of candidate neoantigens that are found in the tumor cells, but not in normal cells. Bioinformatics can be used to identify and prioritize the candidate neoantigens that are attractive targets.

2. *Detecting and prioritizing TCRs*. Only a subset of candidate sequence changes are neoantigens as defined by their ability to stimulate a T cell response and thus are characterized as antigens. Validating targets requires the presentation of candidate neoantigens via HLA with T cells to be co-cultured with antigen presenting cells to efficiently identify the reactive T cells. One or more of the TCRs from individual reactive T cells are then sequenced. The TCRs are typically sequenced from TIL responding to the targeted neoantigens.

3. *Manufacturing TCR^+ T cells*. The sequences of one or more TCRs recognizing one or more neoantigens are placed into DNA plasmids as *Sleeping Beauty* transposons. These DNA plasmids are inserted into T cells derived from peripheral blood using a process called electroporation. T cells stably expressing the introduced TCR(s) are then propagated to produce the TCR^+ T cells in clinically-sufficient numbers before they are released for administration into a patient.

The process for the production and infusion of *Sleeping Beauty* TCR-modified T cells for our Library TCR-T Approach and Personalized TCR-T Approach is based on the electro-transfer of DNA plasmids coding for TCR(s) recognizing one or more neoantigens into T cells derived from a patient's peripheral blood. Following electroporation, the genetically modified T cells are propagated prior to infusion. We believe the use of T cells from peripheral blood as the source of effector cells, rather than TIL, will improve the T cell's ability to kill tumor cells because these circulating lymphocytes are generally "young" and can proliferate and survive *in vivo* to sustain anti-tumor effects.

Infrastructure and Capabilities

During 2020, we made significant progress building critical manufacturing infrastructure, hiring personnel and adding R&D capabilities to support our clinical activities. We completed a buildout of our laboratory and office space on MD Anderson's campus which will support our internal research and development activities. We have begun construction of both a sequencing core laboratory as well as a pilot clinical production unit, or pilot CPU, for GMP cell therapy manufacturing. We expect the pilot CPU will be operational by the end of 2021 and will be used to manufacture a portion of the TCR-T therapies for our clinical trials.

We have also established processes in-house for neoantigen identification, TCR hunting, and TCR-T manufacturing process development. These processes will continue to be optimized to increase efficiencies, utilize new powerful technologies, and reduce time to treatment for the patient.

Clinical Development of TCR-T Program

We believe that a non-viral platform represents the most commercially feasible way of manufacturing neoantigen therapies due to the obstacles presented by inter-tumor heterogeneity and intra-tumor heterogeneity.

We are conducting a Phase 1/2 clinical trial to evaluate our Library TCR-T Approach. The FDA cleared our company-sponsored IND in February 2021 and we have selected MD Anderson as the initial clinical site for this trial. Our library of TCRs will be tested for the treatment of lung, cholangiocarcinoma, pancreatic, colorectal and

gynecological cancers. We expect to begin dosing patients in this trial in the second half of 2021. The primary objective of the Phase 1 portion of the clinical trial is to evaluate the safety and tolerance of the cell therapy product.

We anticipate adding new TCRs to the library and clinical program as they are qualified by our laboratory.

In 2017, we entered into a Cooperative Research and Development Agreement, or CRADA, with the NCI for the development of adoptive cell transfer-based immunotherapies to treat solid tumors under the direction of Steven A. Rosenberg, M.D., Ph.D., Chief of the Surgery Branch at the NCI. Under our CRADA, the NCI will perform clinical evaluations of *Sleeping Beauty*-engineered T cells to express TCRs that are typically reactive against unique neoantigens to mediate cancer regression in patients with refractory solid tumors for several tumor types, including gastrointestinal and genitourinary, breast, ovarian, non-small cell lung cancer and glioblastoma. We anticipate that patients will receive populations of T cells genetically modified to express more than one TCR so that more than one neoantigen can be targeted in the patient. We expect infusing multiple TCRs per patient will reduce the probability of leaving some cancer cells unaddressed, lowering the risk of cancer relapse. The primary objective of the clinical trial is to evaluate tumor response rate with the secondary objective to evaluate the safety and tolerability of the therapy. The FDA has cleared the IND application submitted by the NCI for this Personalized TCR-T clinical trial and the trial was initiated in 2019. However, enrollment in this clinical trial has been temporarily suspended due to issues internal to the NCI and unrelated to our technology. The progress and timeline for this trial, including the timeline for dosing patients, are under the control of the NCI.

Solid Tumor Malignancy Prevalence

Cancer is the second most common cause of death in the United States, accounting for nearly one of every four deaths. Approximately 1,806,590 new cancer cases were expected to be diagnosed, and 606,520 cancer deaths expected to occur, in the United States in 2020 according to the American Cancer Society. Of these, the majority were caused by solid tumors. Invasive cancer, such as malignancies of epithelial tissue represent 80% to 90% of cancer cases according to the Surveillance, Epidemiology, and End Results Program of the NCI. These diseases include colorectal, lung, ovarian, skin, bladder, head and neck cancers, among others.

SLEEPING BEAUTY CAR$^+$ T PROGRAM

Background

We are developing CAR$^+$ T cell therapies targeting CD19 for hematologic malignancies using our *Sleeping Beauty* platform. Our CAR$^+$ T program is focused on (1) shortening the time the patient must wait for treatment with engineered T cells, (2) increasing the access of medical centers to deliver, and patients to receive, this therapy, and (3) providing safe and efficacious T cell therapies to patients.

CARs are engineered molecules that, when present on the surface of a T cell, enable the T cell to directly recognize specific proteins or antigens that are present on the surface of other cells. CAR$^+$ T cell therapies are manufactured individually for the recipient's use by modifying T cells outside the body, causing the T cells to stably express CARs. Our CAR$^+$ T program is focused on CD19, which is a protein expressed on the cell surface of B cells and a validated target for B cell driven hematological malignancies.

Autologous anti-CD19 CAR$^+$ T cell therapies have been approved by the FDA for the treatment of relapsed/refractory (R/R) B-cell lymphomas (Kymriah®,Yescarta®, and Breyanzi®). These approaches have been successful in helping patients fight CD19-positive cancers, resulting in significant remission rates.

We believe our *Sleeping Beauty* CAR$^+$ T therapy could offer distinct advantages to the approach used by currently commercially available CAR$^+$ T cell companies. In particular, the ability of the DNA plasmids from the *Sleeping Beauty* system under our RPM approach to integrate into resting T cells from peripheral blood,

coupled with expression of mbIL15 and CAR, will enable infused T cells to propagate within the patient to target leukemias and lymphoma, thereby avoiding the need to numerically expand T cells for weeks in bioreactors before administration. The reduced cost associated with using DNA plasmids, instead of virus and avoiding lengthy *ex vivo* manufacturing provides a solution to the cost and complexity of the current approach to manufacturing CAR^+ T cells.

Clinical Development of CAR^+ T

In the preclinical setting, the time to manufacture and administer Sleeping Beauty-modified CAR^+ T cells expressing mbIL15 has been reduced to two days or less from gene transfer. This includes time to release the product. This very rapid manufacturing process may deliver genetically modified T cells with superior therapeutic potential in vivo. Preclinical studies of our third generation Sleeping Beauty CAR^+ T cells, presented at the 2017 Annual Meeting of ASH, demonstrated that a single dose of T cells co-expressing a CD19-specific CAR, mbIL15, and kill switch resulted in sustained in vivo persistence that produced potent anti-tumor effects and superior leukemia-free survival in mice.

In conjunction with TriArm Therapeutics, Ltd., or TriArm, we launched Eden BioCell to lead clinical development and commercialization of Sleeping Beauty-generated CAR-T therapies in the People's Republic of China (including Macau and Hong Kong), Taiwan and Korea. Eden BioCell is focused on advancing our RPM technology using patient-derived (autologous) T cells in order to treat patients with relapsed or refractory CD19+ leukemias and lymphomas.

In the fourth quarter of 2020, the Taiwan FDA cleared the IND for a Phase 1 trial to evaluate the CAR-T CD19 RPM therapy in patients with relapsed CD19+ leukemias and lymphomas. This trial will be conducted at the National Taiwan University Hospital and will enroll up to 24 patients, with the goal of infusing 16 patients. The primary endpoint of the trial will be to evaluate the safety and tolerability of autologous CD19-specific T cells manufactured using the RPM technology. We expect patients will be enrolled in this trial in the first half of 2021.

We have advanced our CAR+ T technology in the United States in collaboration with MD Anderson in a Phase 1 clinical trial infusing CD19-specific CAR+ T therapies manufactured using our RPM technology. In this trial, we plan to infuse donor-derived T cells after allogeneic BMT for recipients who have relapsed with CD19+ leukemias and lymphomas. We announced the FDA cleared the IND application submitted by MD Anderson for this clinical trial in 2019 and MD Anderson initiated the trial in the first half of 2020. Patients have entered the study and corresponding donor cells have been collected. These patients are expected to be dosed upon progression of their cancer.

Hematologic Tumor Malignancy Prevalence

According to the Leukemia and Lymphoma Society, an estimated 178,520 people are expected to be diagnosed with leukemia, lymphoma, or myeloma in 2020. New diagnoses for such hematologic malignancies in the United States represented approximately 10% of the new cancer cases in the United States in 2020.

CONTROLLED IL-12 PLATFORM TECHNOLOGY

Background

Ad-RTS-hIL-12 plus veledimex is our gene delivery system to regulate production of IL-12, a potent, naturally occurring anti-cancer protein which functions as a master regulator of the immune system. We control the generation of recombinant IL-12 using a replication-incompetent adenoviral, or Ad, vector administered via a single injection of virus into the brain tumor and engineered to conditionally express human IL-12, or hIL-12. The conditional expression of hIL-12 is modulated with the RheoSwitch Therapeutic System® (RTS®) by the small molecule veledimex, an activator ligand orally administered that has been shown to cross the blood-brain barrier.

In this way, Ad-RTS-hIL-12 is administered within the tumor under the control of the RTS “switch”. Activation of the switch, and therefore conditional gene expression and subsequent IL-12 protein production, is tightly controlled by the activator ligand, veledimex, delivered to the patient as a daily oral capsule, typically over 14 days. When veledimex is administered to a patient, the switch is turned “on” and IL-12 is produced; when veledimex is withdrawn, the switch is turned “off” and production of recombinant IL-12 ceases. The amount of IL-12 produced is proportional to the dosing of veledimex which further enhances control of this cytokine. We believe the ability regulate production of IL-12 after administration of the virus is critical for the development of this potent cytokine.

Recombinant IL-12 has been shown to be biologically active as, for example, it can stimulate production of the body’s own interferon-gamma, or IFN-g. IL-12 is a potent pro-inflammatory cytokine capable of reversing immune escape mechanisms and improving the function of tumor fighting natural killer, or NK, cells and T cells.

Controlled IL-12 has been shown to biologically turn “cold tumors hot.” In our clinical trials, we have seen deep and sustained infiltration of activated T cells (i.e., “hot” tumors) where previously there had been very little T cell infiltration (i.e., “cold” tumors). Data from repeat biopsies obtained four to six months following administration of Ad-RTS-hIL-12 plus veledimex has shown an increased and sustained infiltration of activated T cells producing IFN-g within the brain-tumor lesion as reported in *Science Translation Medicine*. Data from our Phase 1 monotherapy clinical trial provided compelling evidence from biopsies, taken more than four months after administration of Ad-RTS-hIL-12 plus veledimex, demonstrating that Controlled IL-12 causes a sustained influx of activated killer ($CD8^+$) T cells into brain tumors. These data also show upregulated expression of PD-1/PDL-1 biomarkers, suggesting that the combination of Ad-RTS-hIL-12 plus veledimex with an immune checkpoint inhibitor, such as targeting PD-1, may improve patient outcomes.

Clinical Development of Controlled IL-12

Glioblastoma Prevalence

We are currently developing Controlled IL-12 to treat patients with rGBM. Glioblastoma is an aggressive primary brain tumor affecting approximately 74,000 people worldwide each year; it is a fast-growing, aggressive type of central nervous system tumor, with an estimated 12,760 new adult cases predicted in the United States for 2018 according to the American Brain Tumor Association. Recurrence rates for this type of cancer are near 90 percent, and prognosis for adult patients is poor with treatment often combining multiple approaches including surgery, radiation and chemotherapy.

Recurrent glioblastoma is an aggressive cancer with one of the lowest 3-year survival rates, at 3%, among all cancers. For patients who have experienced multiple recurrences, the prognosis is particularly poor, with an overall survival of six to seven months, while overall survival in patients who have failed temozolomide and bevacizumab, or equivalent salvage chemotherapy, is approximately three to five months.

Clinical Development Ad-RTS-IL-12 plus Veledimex for Adult rGBM (Monotherapy and in Combination)

We previously conducted a Phase 1 clinical trial of patients with rGBM, referred to as the Main Study, in patients with rGBM. The primary objective of the trial is to determine the safety and tolerability of a single intra-tumoral Ad-RTS-hIL-12 injection activated upon dosing with oral veledimex. Secondary objectives are to determine the maximum tolerated dose, the immune responses elicited, and assessment of biologic response.

A subset of patients in the Main Study (n=6) with unifocal disease who received single administration of Ad-RTS-hIL-12 with 20 mg daily dosing (15 total planned doses) of veledimex along with low-dose steroids, achieved 17.8 months median overall survival, or mOS. Based on this result, we enrolled 36 subjects in a substudy, referred to as the Expansion Substudy, designed to encourage use of low-dose steroids and 20 mg veledimex to further understand the potential of Controlled IL-12 as a monotherapy.

We are conducting a Phase 1 clinical trial to evaluate Ad-RTS-hIL-12 plus veledimex in combination with Bristol-Myers Squibb Company's OPDIVO® (nivolumab), an immune checkpoint inhibitor, or PD-1 inhibitor, in adult patients with rGBM. This trial was initiated in 2018 and is exploring the potentially synergistic effect of this combination in 21 patients, which have been enrolled. This multi-center, open-label, single-arm trial is being conducted at four sites. Patients with rGBM scheduled for resection who had not been treated previously with inhibitors of immune-checkpoint pathways received Ad-RTS-hIL-12 intratumorally at the time of surgical resection plus a dose of veledimex (10 or 20mg), daily for 14 days. Patients receive nivolumab intravenously (1 or 3 mg/kg) every two weeks until documented progression or withdrawal from the clinical trial and an expansion cohort at the full dose of 20 mg veledimex and 3mg/kg of nivolumab was included.

In November 2018, we announced our entry into a clinical supply agreement with Regeneron to evaluate Ad-RTS-hIL-12 plus veledimex in combination with Regeneron's PD-1 antibody Libtayo® (cemiplimab-rwlc) to treat patients with rGBM. Libtayo has been approved in the United States for the treatment of patients with metastatic cutaneous squamous cell carcinoma, or CSCC, or locally advanced CSCC who are not candidates for curative surgery or curative radiation. This multi-center, open-label, single-arm trial includes 36 patients and is fully enrolled, with the primary endpoints being safety and efficacy. Patients with rGBM scheduled for resection who have not been treated previously with inhibitors of immune-checkpoint pathways received Ad-RTS-hIL-12 intratumorally at the time of surgical resection plus a dose of veledimex (20mg), daily for 14 days. Patients will receive cemiplimab intravenously (350 mg) every three weeks until documented progression or withdrawal from the clinical trial.

We provided interim updates for these trials at the 2020 American Society of Clinical Oncology (ASCO) Annual (Virtual) and 2020 Society for Neuro-Oncology (SNO) Annual Meeting, where we announced that:

- Subjects receiving Ad (Day 0, craniotomy) and 20 mg (Days 0 to 14) veledimex with unifocal disease ("Main" and "Expansion" n=20) administered low-dose corticosteroids showed mOS of 16.2 months (mean follow-up of 14.1 months);
- Subjects receiving Ad (Day 0, craniotomy) and 10 mg (Days 0 to 14) veledimex with 1 mg/kg or 3 mg/kg of nivolumab (n=6; 83% unifocal, 67% low dose steroids) showed mOS 16.9 months with mOS among all subjects (across both 10 mg and 20 mg veledimex dosing, n=21) of 9.8 months;
- Subjects receiving Ad (Day 0, craniotomy) and 20 mg (Days 0 to 14) veledimex with 350 mg/kg of cemiplimab have a mean a follow-up time of 6.5 months with mOS that has not been reached as of the data cut-off date;
- Most patients received low dose steroids, defined as <= 20 mg cumulative dosing of dexamethasone during veledimex administration;
- Serial MRIs show partial responses in each study (6 partial responses reported as of the data cut-off date); and
- Adverse reactions (in monotherapy and in combination) remained consistent with previously reported results, being predictable and promptly reversible upon discontinuation of veledimex, and there were no drug-related deaths reported as of the data cut-off date.

Monotherapy: Clinical Development Ad-RTS-IL-12 plus Veledimex for Pediatric Brain Tumors

In July 2020, we announced the first patient had been dosed in a Phase 1/2 clinical trial evaluating Ad-RTS-hIL-12 plus veledimex for the treatment of DIPG. We provided an interim update for this trial at the 2020 SNO Annual Meeting where we announced that:

- Controlled IL-12 monotherapy was well-tolerated at the initial dose level (10 mg/day veledimex, BSA adjusted);

- Adverse Events (AEs) were similar to adult and older pediatric supratentorial brain tumor subjects in being mild to moderate and predominantly reversible upon withholding of veledimex doses; and
- Survival of the first subject dosed was within the historical reference range.

Future Development of Controlled IL-12 Program

As each of our programs progresses to clinical development, we strategically prioritize our portfolio to ensure our resources and capital are deployed in the optimal manner. With the clearance of the IND for our Ziopharm-sponsored TCR-T clinical trial and the IND for the Eden BioCell-sponsored CAR-T clinical trial, we have elected to allocate an increasing amount of our resources and capital to our Sleeping Beauty TCR program. As a result, we expect to reduce the amount of resources and capital allocated to our Controlled IL-12 program in 2021 and continue to explore partnership opportunities for this program to support its further development. In connection with this reduction in spend, we are evaluating potential changes to data collection of long term follow up and reducing other activities.

License Agreements, Intellectual Property and Other Agreements

Our goal is to obtain, maintain, and enforce patent protection for our products, formulations, processes, methods, and other proprietary technologies to preserve our trade secrets and other confidential information and to operate without infringing the proprietary rights of other parties. Our policy is to actively seek the strongest possible intellectual property protection for our product candidates through a combination of contractual arrangements and patents, both in the United States and abroad.

Exclusive License Agreement with PGEN Therapeutics

On October 5, 2018, we entered into an exclusive license agreement, or the License Agreement, with PGEN Therapeutics, or PGEN, a wholly owned subsidiary of Precigen Inc., or Precigen, which was formerly known as Intrexon Corporation. As between us and PGEN, the terms of the License Agreement replace and supersede the terms of: (a) that certain Exclusive Channel Partner Agreement by and between us and Precigen, dated January 6, 2011, as amended by the First Amendment to Exclusive Channel Partner Agreement effective September 13, 2011, the Second Amendment to the Exclusive Channel Partner Agreement effective March 27, 2015, and the Third Amendment to Exclusive Channel Partner Agreement effective June 29, 2016, which was subsequently assigned by Precigen to PGEN; (b) certain rights and obligations pursuant to that certain License and Collaboration Agreement effective March 27, 2015 between us, Precigen and ARES TRADING S.A., or Ares Trading, a subsidiary of Merck KGaA, or Merck, as assigned by Precigen to PGEN, or the Ares Trading Agreement; (c) that certain License Agreement between us, Precigen, and MD Anderson, with an effective date of January 13, 2015, or the MD Anderson License, which was subsequently assigned by Precigen and assumed by PGEN effective as of January 1, 2018; and (d) that certain Research and Development Agreement between us, Precigen and MD Anderson with an effective date of August 17, 2015, or the Research and Development Agreement, and any amendments or statements of work thereto.

Pursuant to the terms of the License Agreement, we have exclusive, worldwide rights to research, develop and commercialize (i) products utilizing Precigen's RheoSwitch® gene switch, or RTS, for the treatment of cancer, referred to as IL-12 Products, (ii) CAR products directed to (A) CD19 for the treatment of cancer, referred to as CD19 Products, and (B) a second target for the treatment of cancer, subject to certain obligations to pursue such target under the Ares Trading Agreement, and (iii) TCR products designed for neoantigens for the treatment of cancer. Under the License Agreement, we also have exclusive, worldwide rights for certain patents relating to the *Sleeping Beauty* technology to research, develop and commercialize TCR products for both neoantigens and shared antigens for the treatment of cancer, referred to as TCR Products.

We will be solely responsible for all aspects of the research, development and commercialization of the exclusively licensed products for the treatment of cancer. We are required to use commercially reasonable efforts to develop and commercialize IL-12 products, CD19 products and TCR Products.

In consideration of the licenses and other rights granted by PGEN, we will pay PGEN an annual license fee of $100 thousand and we have agreed to reimburse PGEN for certain historical costs of the licensed programs up to $1.0 million, which was fully paid during the year ending December 31, 2019.

We will make milestone payments totaling up to an additional $52.5 million for each exclusively licensed program upon the initiation of later stage clinical trials and upon the approval of exclusively licensed products in various jurisdictions. In addition, we will pay PGEN tiered royalties ranging from low-single digit to high-single digit on the net sales derived from the sales of any approved IL-12 products and CAR products. We will also pay PGEN royalties ranging from low-single digit to mid-single digit on the net sales derived from the sales of any approved TCR products, up to a maximum royalty amount of $100.0 million in the aggregate. We will also pay PGEN 20% of any sublicensing income received by us relating to the licensed products. We are responsible for all development costs associated with each of the licensed products.

PGEN will pay us royalties ranging from low-single digits to mid-single digits on the net sales derived from the sale of PGEN's CAR products, up to a maximum royalty amount of $50.0 million.

In consideration of our entry into the License Agreement, Precigen has forfeited and returned to us all shares of our Series 1 preferred stock held by or payable to Precigen as of the date of the License Agreement.

In October 2020, we entered into an amendment to the License Agreement relating to the transfer of certain materials and PGEN's obligations to provide transition assistance relating to the IL-12 products.

We determined that this transaction represented a capital transaction between related parties. We fair valued the preferred stock and the derivative liability on the date of the transaction, noting a total fair value of $163.3 million. The relinquishment of our obligation under the Ares Trading Agreement was also considered part of the overall capital transaction. We recognized an additional credit to accumulated deficit of $49.5 million as a result of the relief of the obligation under the Ares Trading Agreement. The total amount of the settlement was $212.8 million.

We incurred approximately $7.4 million of transaction advisory costs with third-party vendors, of which $5.4 million was considered a direct cost associated with the Series 1 preferred stock extinguishment and is also included as part of the consideration transferred. The remaining $2.0 million of transaction costs were recognized as an expense during the year ended December 31, 2018.

We recognized a net credit to accumulated deficit of $207.3 million, calculated as the difference in the carrying value of the Series 1 preferred stock, derivative liability, and contract liability, and the consideration transferred of $5.4 million, in connection with the transaction. This amount is included in net income available to common shareholders in the calculation of earnings per share.

License Agreement and 2015 Research and Development Agreement—The University of Texas MD Anderson Cancer Center

On January 13, 2015, we, together with Precigen, entered into the MD Anderson License with MD Anderson (which Precigen subsequently assigned to PGEN). Pursuant to the MD Anderson License, we, together with PGEN, hold an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson including technologies relating to novel CAR T-cell therapies, non-viral gene transfer systems, genetic modification and/or propagation of immune cells and other cellular therapy approaches, Natural Killer, or NK Cells, and TCRs, arising from the laboratory of Laurence Cooper, M.D., Ph.D., who served as our Chief Executive Officer from May 2015 to February 2021 and was formerly a tenured professor of pediatrics at MD Anderson.

On August 17, 2015, we, Precigen and MD Anderson entered into the Research and Development Agreement, or the 2015 R&D Agreement, to formalize the scope and process for the transfer by MD Anderson, pursuant to the

terms of the MD Anderson License, of certain existing research programs and related technology rights, as well as the terms and conditions for future collaborative research and development of new and ongoing research programs. The rights and obligations of Precigen under the 2015 R&D Agreement were assigned to us pursuant to the Fourth Amendment to Research and Development Agreement which was entered into on September 18, 2019 (the "Fourth Amendment") with an effective date of October 5, 2018. The activities under the 2015 R&D Agreement are directed by a joint steering committee comprised of two members from our company and one member from MD Anderson.

As provided under the MD Anderson License, we provided funding for research and development activities in support of the research programs under the 2015 R&D Agreement for a period of three years and in an amount of no less than $15.0 million and no greater than $20.0 million per year. On November 14, 2017, we entered into an amendment to the 2015 R&D Agreement extending its term until April 15, 2021. During the year ended December 31, 2019, we made no payments to MD Anderson compared to $2.7 million during the year ended December 31, 2018. The decrease in cash paid to MD Anderson during the year ended December 31, 2019 as compared to the same period in the prior year is a result of the final quarterly payment being made to MD Anderson in January 2018 and the result of approved expenditures incurred by us being deducted from the January 2018 quarterly payment. The net balance of cash resources on hand at MD Anderson available to offset expenses and future costs is $8.1 million, which is included in other current assets on our balance sheet at December 31, 2020.

The term of the MD Anderson License expires on the last to occur of (a) the expiration of all patents licensed thereunder, or (b) the twentieth anniversary of the date of the MD Anderson License; provided, however, that following the expiration of the term of the MD Anderson License, we, together with Precigen, shall then have a fully-paid up, royalty free, perpetual, irrevocable and sublicensable license to use the licensed intellectual property thereunder. After ten years from the date of the MD Anderson License and subject to a 90-day cure period, MD Anderson will have the right to convert the MD Anderson License into a non-exclusive license if we and Precigen are not using commercially reasonable efforts to commercialize the licensed intellectual property on a case-by-case basis. After five years from the date of the MD Anderson License and subject to a 180-day cure period, MD Anderson will have the right to terminate the MD Anderson License with respect to specific technology(ies) funded by the government or subject to a third-party contract if we and Precigen are not meeting the diligence requirements in such funding agreement or contract, as applicable. MD Anderson may also terminate the agreement with written notice upon material breach by us and Precigen, if such breach has not been cured within 60 days of receiving such notice. In addition, the MD Anderson License will terminate upon the occurrence of certain insolvency events for both us and Precigen and may be terminated by the mutual written agreement of us, Precigen, and MD Anderson.

In connection with the execution of the 2019 R&D Agreement described below, on October 22, 2019, we amended the 2015 R&D Agreement to extend the term of the 2015 R&D Agreement until December 31, 2026 and to allow cash resources on hand at MD Anderson under the 2015 R&D Agreement to be used for development costs under the 2019 R&D Agreement.

2019 Research and Development Agreement—The University of Texas MD Anderson Cancer Center

On October 22, 2019, we entered into the 2019 Research and Development Agreement, or the 2019 R&D Agreement, with MD Anderson pursuant to which the parties agreed to collaborate with respect to the TCR program. Under the 2019 R&D Agreement, the parties will, among other things, collaborate on programs to expand our TCR library and conduct clinical trials. The activities under the 2019 R&D Agreement are directed by a joint steering committee comprised of two members from our company and one member from MD Anderson.

We will own all intellectual property developed under the 2019 R&D Agreement and we will retain all rights to intellectual property for oncology products manufactured using non-viral gene transfer technologies under the

2019 R&D Agreement, including our *Sleeping Beauty* technology. We have granted MD Anderson an exclusive license for such intellectual property outside the field of oncology and to develop and commercialize autologous TCR products manufactured using viral gene transfer technologies, and a non-exclusive license for allogeneic TCR products manufactured using viral-based technologies.

Under the 2019 R&D Agreement, we agreed, beginning on January 1, 2021, to reimburse MD Anderson up to a total of $20 million for development costs under the 2019 R&D Agreement, after the funds from the 2015 R&D Agreement are exhausted. In addition, we will pay MD Anderson royalties on net sales of its TCR products at rates in the low single digits. We are required to make performance-based payments upon the successful completion of clinical and regulatory benchmarks relating to its TCR products. The aggregate potential benchmark payments are $36.5 million, of which only $3.0 million will be due prior to the first marketing approval of our TCR products. The royalty rates and benchmark payments owed to MD Anderson may be reduced upon the occurrence of certain events. We also agreed to sell our TCR products to MD Anderson at preferential prices and will sell our TCR products in Texas exclusively to MD Anderson for a limited period of time following the first commercial sale of our TCR products.

The 2019 R&D Agreement will terminate on December 31, 2026 and either party may terminate the 2019 R&D Agreement following written notice of a material breach. The 2019 R&D Agreement also contains customary provisions related to indemnification obligations, confidentiality and other matters.

In connection with the execution of the 2019 R&D Agreement, on October 22, 2019, we issued MD Anderson a warrant to purchase 3,333,333 shares of our common stock, which is referred to as the MD Anderson Warrant. The MD Anderson Warrant has an initial exercise price of $0.001 per share, expires on December 31, 2026 and vests upon the occurrence of certain clinical milestones. As of December 31, 2020, none of the milestones have been met.

The MD Anderson Warrant and the shares of our common stock to be issued upon exercise of the MD Anderson Warrant have not been registered under the Securities Act of 1933, as amended, and may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements.

License Agreement with the National Cancer Institute

On May 28, 2019, we entered into a patent license agreement, or the Patent License, with the National Cancer Institute, or the NCI. Pursuant to the Patent License, we hold an exclusive, worldwide license to certain intellectual property to develop and commercialize patient-derived (autologous), peripheral blood T-cell therapy products engineered by transposon-mediated gene transfer to express TCRs reactive to mutated KRAS, p53 and EGFR neoantigens. In addition, pursuant to the Patent License, we hold an exclusive, worldwide license to certain intellectual property for manufacturing technologies to develop and commercialize autologous, peripheral blood T-cell therapy products engineered by non-viral gene transfer to express TCRs, as well as a non-exclusive, worldwide license to certain additional manufacturing technologies. On January 8, 2020 and September 28, 2020, we amended the Patent License to expand the TCR library licensed from the NCI to include additional TCRs reactive to mutated KRAS and TP53 neoantigens.

Pursuant to the terms of the Patent License, we are required to pay the NCI a cash payment in the aggregate amount of $1.5 million payable in $0.5 million installments within sixty days, six-months, and the twelve-month anniversary of the effective date of the agreement for the Patent License. We also reimbursed the NCI for past patent expenses in the aggregate amount of approximately $46 thousand. Under the amendment to the patent license signed in January 2020, we agreed to pay the NCI a cash payment of $600,000 within sixty days of the amendment and under the amendment to the patent license signed in September 2020, we agreed to pay the NCI a cash payment of $411,000 within sixty days of the amendment.

The terms of the Patent License also require us to pay the NCI minimum annual royalties in the amount of $0.3 million, which amount will be reduced to $0.1 million once the aggregate minimum annual royalties paid by us equals $1.5 million.

We are also required to make performance-based payments upon successful completion of clinical and regulatory benchmarks relating to the licensed products. The aggregate potential benchmark payments are $4.3 million, of which aggregate payments of $3.0 million are due only after marketing approval in the United States or in Europe, Japan, Australia, China or India. The first benchmark payment of $0.1 million will be due upon the initiation of our first sponsored Phase 1 clinical trial of a licensed product or licensed process in the field of use licensed under the Patent License.

In addition, we are required to pay the NCI one-time benchmark payments following aggregate net sales of licensed products at certain net sales up to $1.0 billion. The aggregate potential amount of these benchmark payments is $12.0 million. We must also pay the NCI royalties on net sales of products covered by the Patent License at rates in the low to mid-single digits depending upon the technology included in a licensed product. To the extent we enter into a sublicensing agreement relating to a licensed product, we are required to pay the NCI a percentage of all consideration received from a sublicensee, which percentage will decrease based on the stage of development of the licensed product at the time of the sublicense.

The Patent License will expire upon expiration of the last patent contained in the licensed patent rights, unless terminated earlier. The NCI may terminate or modify the Patent License in the event of a material breach, including if we do not meet certain milestones by certain dates, or upon certain insolvency events that remain uncured following the date that is 90 days following written notice of such breach or insolvency event. We may terminate the Patent License, or any portion thereof, in our sole discretion at any time upon 60 days' written notice to the NCI. In addition, the NCI has the right to: (i) require us to sublicense the rights to the product candidates covered by the Patent License upon certain conditions, including if we are not reasonably satisfying required health and safety needs and (ii) terminate or modify the Patent License, including if we are not satisfying requirements for public use as specified by federal regulations.

Cooperative Research and Development Agreement (CRADA) with the National Cancer Institute

On January 10, 2017, we announced the signing of the CRADA with the NCI for the development of adoptive cell transfer, or ACT,-based immunotherapies genetically modified using the *Sleeping Beauty* transposon/transposase system to express TCRs for the treatment of solid tumors. The principal goal of the CRADA is to develop and evaluate ACT for patients with advanced cancers using autologous peripheral blood lymphocytes, or PBL, genetically modified using the non-viral *Sleeping Beauty* system to express TCRs that recognize neoantigens expressed within a patient's cancer. Research conducted under the CRADA will be at the direction of Steven A. Rosenberg, M.D., Ph.D., Chief of the Surgery Branch at the NCI, in collaboration with our researchers and PGEN researchers. During the year ended December 31, 2020 and 2019, the Company made payments of $2.5 million, each year. In February of 2019, the Company extended the CRADA with the NCI for two years, committing an additional $5.0 million to this program.

Patents and Other Intellectual Property Rights and Protection

Patents extend for varying periods according to the date of patent filing or grant and the legal term of patents in the various countries where patent protection is obtained. The actual protection offering by a patent, which can vary from country to country, depends of the type of patent, the scope of its coverage and the availability of legal remedies in the country.

Pursuant to the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments, some of our patents, under certain conditions, may be eligible for limited patent term extension for a period of up to five years as compensation for patent term lost during drug development and the FDA regulatory review process. However, this extension period cannot be extended beyond 14 years from the drug's approval date. The patent term restoration period is generally one-half the period of time elapsed between the effective date of an IND application or the issue date of the patent, whichever is later, and the submission date of an NDA, plus the period of time between the submission date of the NDA or the issue date of the patent,

whichever is later, and FDA approval. The United States Patent and Trademark Office, in consultation with the FDA, reviews and approves applications for any patent term extension or restoration. We intend to seek the benefits of this statute, but there can be no assurance that we will be able to obtain any such benefits.

We also depend upon the skills, knowledge, and experience of our scientific and technical personnel, as well as those of our advisors, consultants, and other contractors, none of which may be patentable. To help protect unpatentable proprietary know-how, and for inventions for which patents may be difficult to enforce, we currently rely, and in the future, will continue to rely, on trade secret protection and confidentiality agreements to protect our interests. To this end, we generally require employees, consultants, advisors and other contractors to enter into confidentiality agreements that prohibit the disclosure of confidential information and, where applicable, require disclosure and assignment to us of the ideas, developments, discoveries and inventions important to our business.

Our patent position and proprietary rights are subject to certain risks and uncertainties. Please read the *"Risk Related to Our Intellectual Property"* section for further information about certain risks and uncertainties that may affect our patent position and proprietary rights.

Additional information as of December 31, 2019 about material patents and other proprietary rights covering our product candidates is set forth below.

TCR^+ T and CAR^+ T

In January 2015, we in-licensed from MD Anderson a technology portfolio that includes intellectual property directed to certain non-viral *Sleeping Beauty* technology as well as TCR^+ T and CAR^+ T cell therapy and bioprocessing technology. Under the terms of the agreement, we have an exclusive license to certain of the intellectual property technology, a co-exclusive license to certain of the intellectual property technology and a non-exclusive license to certain of the intellectual property technology. Our rights to the MD Anderson intellectual property flow to us via our agreement with PGEN.

In May 2019, we in-licensed from NCI a technology portfolio that includes intellectual property directed to certain TCR^+ T cell therapy and manufacturing technology. Under the terms of the agreement, we hold an exclusive, worldwide license to certain intellectual property to develop, manufacture and commercialize patient-derived (autologous), peripheral blood T-cell therapy products engineered by transposon-mediated gene transfer to express TCRs reactive to mutated KRAS, TP53 and EGFR neoantigens. In addition, we hold an exclusive, worldwide license to certain intellectual property for manufacturing technologies to develop and commercialize autologous, peripheral blood T-cell therapy products engineered by non-viral gene transfer to express TCRs, as well as a non-exclusive, worldwide license to certain additional manufacturing technologies.

Ad-RTS-IL-12 plus veledimex

The patent estate licensed to us by PGEN covering Ad-RTS-IL-12 plus activator ligands, such as veledimex ligand compositions, methods of use, methods of manufacture, and formulations includes over one hundred patents and applications. This portfolio includes issued patents and pending applications in Europe, Canada, Japan, Australia and other countries. The term of one or more of the issued patents may be extended due to the regulatory approval process.

Governmental Regulation and Product Approval

As a biopharmaceutical company, we are subject to extensive regulation. Our programmed T-cell product candidates are regulated as biologics. With this classification, commercial production of our products will need to occur in registered and licensed facilities in compliance with current Good Manufacturing Practices, or cGMPs, for biologics.

Human immunotherapy products are a new category of therapeutics. The FDA categorizes human cell- or tissue-based products as either minimally manipulated or more than minimally manipulated and has determined that more than minimally manipulated products require clinical trials to demonstrate product safety and efficacy and the submission of a Biologics License Application, or BLA, for marketing authorization.

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

U.S. Product Development Process

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

- completion of preclinical laboratory tests and animal studies according to Good Laboratory Practices, or GLPs, and applicable requirements for the humane use of laboratory animals or other applicable regulations;
- submission to the FDA of an Investigational New Drug Application, or IND, 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, or 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 for its intended use;
- preparation and submission to the FDA of a Biologics License Application, or BLA, for marketing approval that includes substantive evidence of safety, purity, and potency from results of nonclinical testing and clinical trials;
- satisfactory completion of one or more FDA inspections of the manufacturing facility or facilities where the biological product is produced to assess compliance with cGMP to assure that the facilities, methods and controls used in product manufacture are adequate to preserve the biological product's identity, strength, quality and purity and, if applicable, the FDA's current Good Tissue Practices, or GTPs, for the use of human cellular and tissue products;

- potential FDA audit of the nonclinical study and clinical trial sites that generated the data in support of the BLA;
- payment of user fees for FDA review of the BLA; and
- FDA acceptance, review and approval, or licensure, of the BLA, which might include review by an advisory committee, a panel typically consisting of independent clinicians and other experts who provide recommendations as to whether the application should be approved and under what conditions.

Before testing any biological product candidate, including our product candidates, in humans, the product candidate must undergo rigorous preclinical testing. Preclinical tests, also referred to as nonclinical studies, include laboratory evaluations as well as *in vitro* and animal studies to assess the potential safety and efficacy of the product candidate. The clinical trial sponsor must submit an IND to the FDA before clinical testing can begin in the United States. An IND must contain the results of the preclinical tests, manufacturing information, analytical data, any available clinical data or literature, a proposed clinical protocol, an investigator's brochure, a sample informed consent form, and other materials. Clinical trial protocols detail, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria, and the parameters to be used to monitor subject safety, including stopping rules that assure a clinical trial will be stopped if certain adverse events should occur. Each protocol and any amendments to the protocol must be submitted to the FDA as part of the IND. Some preclinical testing, such as toxicity studies, may continue even after the IND is submitted.

The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA raises concerns or questions regarding the proposed clinical trials or places the trial on a clinical hold within that 30-day time period. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. The FDA may also impose clinical holds on a biological product candidate at any time before or during clinical trials due to safety concerns or non-compliance. If the FDA imposes a clinical hold, trials may not recommence without FDA authorization and then only under terms authorized by the FDA.

Further, each clinical trial must be reviewed and approved by an independent institutional review board, or IRB, at or servicing each institution at which the clinical trial will be conducted. An IRB is charged with protecting the welfare and rights of trial participants and considers such items as whether the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the form and content of the informed consent 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 involving recombinant or synthetic nucleic acid molecules also must be reviewed by an institutional biosafety committee, or IBC, a local institutional committee that reviews and oversees basic and clinical research conducted at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment.

Clinical trials involve the administration of the biological 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 must be conducted and monitored in accordance with the FDA's regulations comprising the GCP requirements.

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

- *Phase 1*. The biological product is initially introduced into healthy human subjects and tested for safety. In the case of some products for severe or life-threatening diseases, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients with the target disease or condition.
- *Phase 2*. The biological product is evaluated in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance, optimal dosage and dosing schedule.

- *Phase 3*. Clinical trials are undertaken to further evaluate dosage, clinical efficacy, potency, and safety in an expanded patient population, generally at geographically dispersed clinical trial sites. These clinical trials are intended to generate enough data to statistically evaluate the efficacy and safety of the product for approval, to establish the overall risk to benefit profile of the product and to provide an adequate basis for product labeling.

Phase 1, Phase 2, and Phase 3 clinical trials may not be completed successfully within any specified period, if at all.

Post-approval clinical trials, sometimes referred to as Phase 4 clinical trials, may be conducted after initial marketing approval. These clinical trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication, particularly for long-term safety follow-up.

During all phases of clinical development, regulatory agencies require extensive monitoring and auditing of all clinical activities, clinical data, and clinical trial investigators. Annual progress reports detailing the results of the clinical trials must be submitted to the FDA. Written IND safety reports must be promptly submitted to the FDA, the NIH 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 patients, 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 must submit an IND safety report within 15 calendar days after the sponsor determines that the information qualifies for reporting. The sponsor also must notify the FDA of any unexpected fatal or life-threatening suspected adverse reaction within seven calendar days after the sponsor's initial receipt of the information. The FDA or the sponsor or its data safety monitoring board, an independent group of experts that evaluates study data for safety and makes recommendations concerning continuation, modification, or termination of clinical trials, may suspend or terminate a clinical trial at any time on various grounds, including a finding that the research patients are being exposed to an unacceptable health risk, including risks inferred from other unrelated immunotherapy trials. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the biological product has been associated with unexpected serious harm to patients.

Concurrently with clinical trials, companies usually complete additional nonclinical studies and must also develop additional information about the physical characteristics of the biological product as well as finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. To help reduce the risk of the introduction of adventitious agents with use of biological products, the PHSA 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.

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

After the completion of clinical trials of a biological product, FDA approval of a BLA must be obtained before commercial marketing of the biological product. The BLA must include results of product development,

laboratory and animal studies, human trials, information on the manufacture and composition of the product, proposed labeling and other relevant information.

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

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

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

Notwithstanding the submission of relevant data and information, the FDA may ultimately decide that the BLA does not satisfy its regulatory criteria for approval. If the agency decides not to approve the BLA in its present form, the FDA will issue a Complete Response Letter, which generally outlines the specific deficiencies in the BLA identified by the FDA and may require additional clinical or other data or impose other conditions that must be met in order to secure final approval of the application. The deficiencies identified may be minor, for example, requiring labeling changes, or major, for example, requiring additional clinical trials. Even with the submission of additional information, the FDA may ultimately decide that the application does not satisfy the

regulatory criteria for approval. If a Complete Response Letter is issued, the applicant may either resubmit the BLA, addressing all of the deficiencies identified in the letter, or withdraw the application.

The FDA may require that certain contraindications, warnings or precautions be included in the product labeling, or otherwise limit the scope of any approval. In addition, the FDA may require post marketing clinical trials, sometimes referred to as Phase 4 clinical trials, designed to further assess a biological product's safety and effectiveness, and testing and surveillance programs to monitor the safety of approved products that have been commercialized. After approval, many types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval.

In addition, under the Pediatric Research Equity Act, or PREA, a BLA or supplement to a BLA must contain data to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may grant deferrals for submission of data or full or partial waivers.

Post-Approval Requirements

Any products for which we receive FDA approvals are subject to continuing regulation by the FDA, including, among other things, record-keeping requirements, reporting of adverse experiences with the product, providing the FDA with updated safety and efficacy information, product sampling and distribution requirements, and complying with FDA promotion and advertising requirements.

In addition, quality control and manufacturing procedures must continue to conform to applicable manufacturing requirements after approval to ensure the long-term stability of the product. We rely, and expect to continue to rely, on third parties for the production of clinical and commercial quantities of our products in accordance with cGMP regulations. cGMP regulations require among other things, quality control and quality assurance as well as the corresponding maintenance of records and documentation and the obligation to investigate and correct any deviations from cGMP. Manufacturers and other entities involved in the manufacture and distribution of approved products are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other laws. Accordingly, manufacturers must continue to expend time, money, and effort in the area of production and quality control to maintain cGMP compliance. Discovery of problems with a product after approval may result in restrictions on a product, manufacturer, or holder of an approved BLA, including, among other things, recall or withdrawal of the product from the market.

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

Moreover, the FDA strictly regulates marketing, labeling, advertising and promotion of products. Drugs may be promoted only for the approved indications and in accordance with the provisions of the approved label, although physicians, in the practice of medicine, may prescribe approved drugs for unapproved indications. However, companies may share truthful and not misleading information that is otherwise consistent with the labeling. The

FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant liability.

U.S. Marketing Exclusivity

The Biologics Price Competition and Innovation Act, or BPCIA, amended the PHSA to authorize the FDA to approve similar versions of innovative biologics, commonly known as biosimilars. Biosimilars are approved pursuant to an abbreviated pathway whereby applicants need not submit the full slate of preclinical and clinical data, and approval is based in part on the FDA's findings of safety, purity, and potency for the original biologic (i.e., the reference product). Reference products are eligible to receive 12 years of exclusivity from the time of first licensure of the product, which prevents the FDA from approving any biosimilars to the reference product through the abbreviated pathway, but does not prevent approval of BLAs that are accompanied by a full data package and that do not rely on the reference product. A biosimilar may be approved if the product is highly similar to the reference product notwithstanding minor differences in clinically inactive components and there are no clinically meaningful differences with the reference product in terms of the safety, purity, and potency.

Pediatric exclusivity is another type of regulatory 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 trial in accordance with an FDA-issued "Written Request" for such a trial.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States or, if it affects more than 200,000 individuals in the United States, there is no reasonable expectation that the cost of developing and making a drug or biologic product available 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 marketing application. After the FDA grants orphan designation, the identity of the therapeutic agent and its potential 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 product that has orphan designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications to market the same drug or biological product for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan exclusivity or inability to manufacture the product in sufficient quantities. The designation of such drug also entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user fee waivers. Competitors, however, may receive approval of different products for the indication for which the orphan product has exclusivity or obtain approval for the same product but for a different indication for which the orphan product has exclusivity. Orphan exclusivity also could block the approval of one of our products for seven years if a competitor obtains approval of the same product as defined by the FDA or if our product candidate is determined to be contained within the competitor's product for the same indication or disease. If an orphan designated product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan exclusivity. Orphan drug status in the European Union has similar but not identical benefits in that jurisdiction.

Coverage, Pricing and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any product candidates for which we obtain regulatory approval. In the United States and markets in other countries, sales of any products for which we receive regulatory approval for commercial sale will depend, in significant part, on the extent to which

third-party payors provide coverage, and establish adequate reimbursement levels for such products. In the United States, third-party payors include federal and state healthcare programs, private managed care providers, health insurers and other organizations. The process for determining whether a third-party payor will provide coverage for a product may be separate from the process for setting the price of a product or for establishing the reimbursement rate that such a payor will pay for the product. Third-party payors may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the FDA-approved products for a particular indication. In addition, in the United States, no uniform policy of coverage and reimbursement for drug products exists among third-party payors. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. Third-party payors are increasingly challenging the price, examining the medical necessity of and reviewing the cost-effectiveness of medical products, therapies and services, in addition to questioning their safety and efficacy.

Reimbursement may impact the demand for, and/or the price of, any product candidate which obtains marketing approval. Even if coverage and reimbursement is obtained for a given product candidate by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. Patients who are prescribed medications for the treatment of their conditions, and their prescribing physicians, generally rely on third-party payors to reimburse all or part of the costs associated with those medications. Patients are unlikely to use a product, and physicians may be less likely to prescribe a product, unless coverage is provided and reimbursement is adequate to cover all or a significant portion of the cost of the product. Therefore, coverage and adequate reimbursement is critical to new drug product acceptance.

The downward pressure on health care costs in general, particularly prescription drugs and biologics, has become very intense. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. As a result, increasingly high barriers are being erected to the entry of new products. The marketability of any product candidates for which we receive regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide favorable coverage and adequate reimbursement. In addition, emphasis on managed care in the United States has increased and we expect will continue to increase the pressure on healthcare pricing. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Health Care Laws Governing Interactions with Healthcare Providers

Healthcare providers, and third-party payors in the United States play a primary role in the recommendation and prescription of drug products. Arrangements with healthcare providers, third-party payors and customers can expose pharmaceutical manufactures to broadly applicable fraud and abuse and other healthcare laws, including false claims, privacy and security, price reporting, and physician sunshine laws or regulations. Some of our pre-commercial activities are subject to some of these laws. . The applicable federal, state and foreign healthcare laws and regulations laws that may affect a pharmaceutical manufacture’s ability to operate include, but are not limited to:

- The federal Anti-Kickback Statute, which regulates our business activities, including our marketing practices, educational programs, pricing policies, and relationships with healthcare providers or other entities, by prohibiting, among other things, soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, either the referral of an individual or the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;
- Federal civil and criminal false claims laws, including the False Claims Act which 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 civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;

- The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created new federal civil and criminal statutes that prohibit, among other things, executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their implementing regulations, which imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information on entities and individuals subject to the law including certain healthcare providers, health plans, and healthcare clearinghouses, known as covered entities, as well as individuals and entities that perform services for them which involve the use, or disclosure of, individually identifiable health information, known as business associates as well as their covered subcontractors;
- Requirements to report annually to the Centers for Medicare & Medicaid Services, or CMS certain financial arrangements with physicians and teaching hospitals, as defined in the ACA and its implementing regulations, including reporting any "transfer of value" made or distributed to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and reporting any ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations during the preceding calendar year. Beginning in 2022, applicable manufacturers also will be required to report such information regarding its payments and other transfers of value to physician assistants, nurse practitioners, clinical nurse specialists, anesthesiologist assistants, certified registered nurse anesthetists and certified nurse midwives during the previous year; and
- State and foreign law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government that otherwise restricts certain payments that may be made to healthcare providers and entities; state laws that require drug manufacturers to report information related to payments and other transfer of value to physicians and other healthcare providers and entities; state laws that require the reporting of information related to drug pricing; state and local laws that require the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that business arrangements comply with applicable healthcare laws involve substantial costs. It is possible that governmental and enforcement authorities will conclude that a pharmaceutical manufacturer's business practices do not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If any such actions are instituted against a pharmaceutical manufacturer, and it is not successful in defending itself or asserting its rights, it may be subject to the imposition of significant civil, criminal and administrative penalties, damages, disgorgement, monetary fines, imprisonment, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of operations, as well as additional reporting obligations and oversight if subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws. In addition, the approval and commercialization of drug products outside the United States may also subject a pharmaceutical manufacturer to foreign equivalents of the healthcare laws mentioned above, among other foreign laws.

Healthcare Reform Efforts

A primary trend in the United States healthcare industry and elsewhere is cost containment. Over the last several years, there have been federal and state proposals and legislation enacted regarding the pricing of pharmaceutical and biopharmaceutical products, limiting coverage and reimbursement for drugs and other medical products, and making changes to healthcare financing and the delivery of care in the United States.

In March 2010, the ACA was enacted, which includes measures that have significantly changed healthcare financing by both governmental and private insurers. The provisions of the ACA of importance to the pharmaceutical and biotechnology industry are, among others, the following:

- created an annual, nondeductible fee on any entity that manufactures or imports certain branded prescription drug agents or biologic agents, which is apportioned among these entities according to their market share in certain government healthcare programs;
- increased the rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13% of the average manufacturer price for branded and generic drugs, respectively;
- created a new Medicare Part D coverage gap discount program, in which manufacturers must now agree to offer 70% point-of-sale discounts to negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- extended manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations, unless the drug is subject to discounts under the 340B drug discount program;
- created 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;
- expanded eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing manufacturers' Medicaid rebate liability;
- expanded the entities eligible for discounts under the Public Health Service pharmaceutical pricing program;
- created a new requirement to annually report drug samples that certain manufacturers and authorized distributors provide to physicians;
- expanded healthcare fraud and abuse laws, including the False Claims Act and the federal Anti-Kickback Statute, new government investigative powers, and enhanced penalties for noncompliance;
- created new requirements under the federal Physician Payments Sunshine Act for drug manufacturers to annually report information related to payments and other transfers of value made to physicians and teaching hospitals as well as ownership or investment interests held by physicians and their immediate family members;
- created a Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;
- established a Center for Medicare & Medicaid Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending; and
- created a licensure framework for follow on biologic products.

There have been executive, legal and political challenges to certain aspects of the ACA. For Example, President Trump signed several executive orders and other directives designed to delay, circumvent or loosen certain requirements mandated by the ACA. Concurrently, Congress considered legislation to repeal or repeal and replace all or part of the ACA. While Congress has not passed repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or Tax Act, included a provision which repealed, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or

part of a year that is commonly referred to as the “individual mandate”. Further, the 2020 federal spending package permanently eliminated, effective January 1, 2020, the PPACA-mandated “Cadillac” tax on high-cost employer-sponsored health coverage and medical device tax and, effective January 1, 2021, also eliminated the health insurer tax. The Bipartisan Budget Act of 2018, or the BBA, among other things, amended the ACA, effective January 1, 2019, to increase from 50 percent to 70 percent the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D and to close the coverage gap in most Medicare drug plans, commonly referred to as the “donut hole”. On December 14, 2018, a Texas U.S. District Court Judge ruled that ACA is unconstitutional in its entirety because the “individual mandate” was repealed by Congress as part of the Tax Act. Additionally, on December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court ruling that the individual mandate was unconstitutional and remanded the case back to the District Court to determine whether the remaining provisions of the ACA are invalid as well. The U.S. Supreme Court is currently reviewing this case, but it is unknown when a decision will be reached. Although the U.S. Supreme Court has not yet ruled on the constitutionality of the ACA, on January 28, 2021, President Biden issued an executive order to initiate a special enrollment period from February 15, 2021 through May 15, 2021 for purposes of obtaining health insurance coverage through the ACA marketplace. The executive order also instructs certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is unclear how the Supreme Court ruling, other such litigation, and the healthcare reform measures of the Biden administration will impact the ACA and our business.

In addition, other federal health reform measures have been proposed and adopted in the United States since the ACA was enacted. For example, as a result of the Budget Control Act of 2011, providers are subject to Medicare payment reductions of 2% per fiscal year, which went into effect on April 1, 2013 and, due to subsequent legislative amendments to the statute, including the BBA, will remain in effect through 2030 unless additional Congressional action is taken. However, COVID-19 relief support legislation suspended the 2% Medicare sequester from May 1, 2020 through March 31, 2021. Further, the American Taxpayer Relief Act of 2012 reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments from providers from three to five years. The Medicare Access and CHIP Reauthorization Act of 2015 also introduced a quality payment program under which certain individual Medicare providers will be subject to certain incentives or penalties based on new program quality standards. In November 2019, CMS issued a final rule finalizing the changes to the Medicare Quality Payment Program.

Further, there has been heightened governmental scrutiny in the United States of pharmaceutical pricing practices in light of the rising cost of prescription drugs and biologics. Such scrutiny has resulted in several recent 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. At the federal level, the Trump administration used several means to propose or implement drug pricing reform, including through federal budget proposals, executive orders and policy initiatives. For example, on July 24, 2020 and September 13, 2020, the Trump administration announced several executive orders related to prescription drug pricing that attempt to implement several of the administration’s proposals. The FDA also released a final rule, effective November 30, 2020, implementing a portion of the importation executive order providing guidance for states to build and submit importation plans for drugs from Canada. Further, on November 20, 2020, the U.S. Department of Health and Human Services, or HHS, finalized a regulation removing 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 implementation of the rule has been delayed by the Biden administration from January 1, 2022 to January 1, 2023 in response to ongoing litigation. The rule also creates a new safe harbor for price reductions reflected at the point-of-sale, as well as a new safe harbor for certain fixed fee arrangements between pharmacy benefit managers and manufacturers, the implementation of which have also been delayed pending review by the Biden administration until March 22, 2021. On November 20, 2020, CMS issued an interim final rule implementing President Trump’s Most Favored Nation executive order, which

would tie Medicare Part B payments for certain physician-administered drugs to the lowest price paid in other economically advanced countries, effective January 1, 2021. On December 28, 2020, the United States District Court in Northern California issued a nationwide preliminary injunction against implementation of the interim final rule. However, it is unclear whether the Biden administration will work to reverse these measures or pursue similar policy initiatives.

At the state level, legislatures have increasingly enacted 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. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs.

U.S. Foreign Corrupt Practices Act, U.K. Bribery Act and Other Laws

The Foreign Corrupt Practices Act, or the FCPA, prohibits any U.S. individual or business from paying, offering, or authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations. Activities that violate the FCPA, even if they occur wholly outside the United States, can result in criminal and civil fines, imprisonment, disgorgement, oversight, and debarment from government contracts.

Our operations are also subject to non-U.S. anti-corruption laws such as the U.K. Bribery Act 2010, or the Bribery Act. As with the FCPA, these laws generally prohibit us and our employees and intermediaries from authorizing, promising, offering, or providing, directly or indirectly, improper or prohibited payments, or anything else of value, to government officials or other persons to obtain or retain business or gain some other business advantage. Under the Bribery Act, we may also be liable for failing to prevent a person associated with us from committing a bribery offense.

We are also subject to other laws and regulations governing our international operations, including regulations administered by the governments of the United Kingdom and the United States and authorities in the European Union, including applicable export control regulations, economic sanctions and embargoes on certain countries and persons, anti-money laundering laws, import and customs requirements and currency exchange regulations, collectively referred to as trade control laws.

Failure to comply with the Bribery Act, the FCPA and other anti-corruption laws and trade control laws could subject us to criminal and civil penalties, disgorgement and other sanctions and remedial measures, and legal expenses.

Competition

The development and commercialization for new products to treat cancer, including the indications we are pursuing, is highly competitive and considerable competition exists from major pharmaceutical, biotechnology and specialty cancer companies. Many of these companies have more experience in preclinical and clinical development, manufacturing, regulatory, and global commercialization. We are also competing with academic institutions, governmental agencies, and private organizations that are conducting research in the field of cancer.

Our genetically engineering T-cell programs face significant competition in the CAR and TCR technology space from multiple companies and their collaborators. Three such companies, Novartis International AG (Kymriah®),

Kite Pharma Inc./Gilead Sciences, Inc. (Yescarta®) and Bristol-Myers Squibb Company (Breyanzi®), have now commercialized autologous CAR+ T cells against CD19. Additional companies developing autologous CAR+ T targets include Bristol-Myers Squibb Company, Precigen, Inc., bluebird bio, Inc., Nanjing Legend Biotech and Janssen Biotech, Inc., a subsidiary of Johnson & Johnson, Gracell Biotechnologies Inc., CARsgen Therapeutics Co. Ltd., Bellicum Pharmaceuticals, Inc., Autolus Therapeutics plc, Mustang Bio, Inc., Crispr Therapeutics AG, Precision Biosciences Inc., Protheragen Inc.and Marker Therapeutics, Inc. Several companies are pursuing the development of allogeneic CAR+ T therapies, including Allogene Therapeutics, Inc. (in collaboration with Pfizer Inc.), Atara Biotherapeutics, Inc. and Cellectis SA (in collaboration with Servier) which may compete with our product candidates.

Our TCR program faces competition from several companies, including from Adaptimmune Therapeutics plc in collaboration with GlaxoSmithKline plc, ArsenalBio, Lyell, bluebird bio, Kite Pharma Inc./Gilead Sciences, Inc., Achilles Therapeutics Limited, Iovance Biotherapeutics, Inc., Immatics Biotechnologies GmbH, Tmunity Therapeutics Inc, Medigene AG, Tactiva Therapeutics, LLC, Takara Bio, Inc., TCR2 Therapeutics Inc., Zelluna Immunotherapy AS, PACT Pharma, Inc. and others. Several companies, including Advaxis Inc./Amgen Inc., BioNTech AG and Gritstone Oncology, Inc., are pursuing vaccine platforms to target neoantigens for solid tumors. Other companies are developing non-viral gene therapies, including Poseida Therapeutics, Inc. and several companies developing CRISPR technology. We also face competition from companies developing therapies using cells other than T cells such as Takeda Pharmaceutical Company, NantKwest, Inc., IN8bio, Inc., Fate Therapeutics Inc. and TC BioPharm Limited. We also face competition from companies developing T cells with cytokines such as Torque Therapeutics and Obsidian Therapeutics, Inc. We also face competition from non-cellbased treatments offered by other companies such as Amgen Inc., AstraZeneca plc, Bristol-Myers Squibb Company, Incyte Corporation, Merck & Co., Inc., and Roche Holding AG.

We are initially developing our Controlled IL-12 platform for the treatment of rGBM. Companies that sell marketed drugs for rGBM are Genentech Inc. and Roche Holding AG with Avastin (bevacizumab), a vascular endothelial growth factor directed antibody indicated for the treatment of adults with rGBM. Arbor Pharmaceuticals Inc. markets GLIADEL Wafer, which is indicated in patients with newly diagnosed high-grade malignant glioma as an adjunct to surgery and radiation and is also indicated in patients with recurrent glioblastoma multiforme as an adjunct to surgery. Additionally, Novocure has developed Optune (tumor treating fields) for newly diagnosed and recurrent glioblastoma. Several companies have product candidates in Phase 3 development for the treatment of glioblastoma, including, but not limited to, Cordgenics, LLC, Bayer AG, Kazia Therapeutics Limited, and Kintara Therapeutics, Inc. Several companies and institutions have product candidates currently in Phase 2 clinical trials, including, but not limited to, Abbvie Inc., DNAtrix Therapeutics, Istari Oncology, Karyopharm and MedImmune LLC/AstraZeneca plc, and other companies are actively developing additional products to treat brain cancer including Mustang Bio Inc. and Northwest Biotherapeutics, Inc.

Other competitors with product candidates currently in Phase 2 clinical trials include AbbVie Inc.'s Depatus-M (ABT-414) and DNA-2401, a conditionally replicative adenovirus being evaluated in combination with pembrolizumab (KEYTRUDA®) for rGBM by DNATrix Inc. and Merck & Co., Inc. Duke University is enrolling a randomized Phase 2 clinical trial of oncolytic polio/rhinovirus recombinant (PVSRIPO) alone or in combination with lomustine in recurrent WHO Grade IV malignant glioma patients. Also, MedImmune, LLC/ AstraZeneca plc's durvalumab was evaluated in a Phase 2 clinical trial in patients with rGBM.

Employees and Human Capital Resources

As of February 16, 2021, we had 103 full-time employees and 3 part-time employees, 80 of whom were engaged in research and development activities and 26 of whom were engaged in business development, finance, information systems, facilities, human resources or administrative support. None of our employees are subject to a collective bargaining agreement and we believe our relations with our employees is good.

Our human capital resources objectives include, as applicable, identifying, recruiting, retaining, incentivizing and integrating our existing and additional employees. The principal purposes of our equity incentive plans are to

attract, retain and motivate selected employees, consultants and directors through the granting of stock-based compensation awards and cash-based performance bonus awards.

Corporate Information

We originally incorporated in Colorado in September 1998 (under the name Net Escapes, Inc.) and later changed our name to "EasyWeb, Inc." in February 1999. We re-incorporated in Delaware on May 16, 2005 under the same name. On September 13, 2005, we completed a "reverse" acquisition of privately held Ziopharm, Inc., a Delaware corporation. To effect this transaction, we caused ZIO Acquisition Corp., our wholly-owned subsidiary, to merge with and into Ziopharm, Inc., with Ziopharm, Inc. surviving as our wholly owned subsidiary. In accordance with the terms of the merger, the outstanding common stock of Ziopharm, Inc. automatically converted into the right to receive an aggregate of approximately 97.3% of our outstanding common stock (after giving effect to the transaction). Following the merger, we caused Ziopharm, Inc. to merge with and into us and we changed our name to "Ziopharm Oncology, Inc." Although EasyWeb, Inc. was the legal acquirer in the transaction, we accounted for the transaction as a reverse acquisition under generally accepted accounting principles. As a result, Ziopharm, Inc. became the registrant with the Securities and Exchange Commission, or the SEC, and the historical financial statements of Ziopharm, Inc. became our historical financial statements.

Our principal executive offices are located at One First Avenue, Parris Building 34, Navy Yard Plaza, Boston, Massachusetts 02129, and our telephone number is (617) 259-1970.

Available Information

Our website address is www.ziopharm.com. Our website and information included in or linked to our website are not part of this Annual Report on Form 10-K. We file reports with the SEC, which we make available on our website free of charge. These reports include annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to such reports, each of which is provided on our website as soon as reasonably practicable after we electronically file such materials with or furnish them to the SEC. In addition, the SEC maintains a website (www.sec.gov) that contains reports, proxy and information statements, and other information regarding issuers, like us, that file electronically with the SEC, including us.

Item 1A. Risk Factors

An investment in our common stock is very risky. In addition to the other information in this Annual Report on Form 10-K, you should carefully consider the following risk factors in evaluating us and our business. If any of the events described in the following risk factors were to occur, our business, financial condition, results of operation and future growth prospects would likely be materially and adversely affected. In that event, the trading price of our common stock could decline, and you could lose all or a part of your investment in our common stock. Therefore, we urge you to carefully review this entire report and consider the risk factors discussed below. Moreover, the risks described below are not the only ones that we face. Additional risks not presently known to us or that we currently deem immaterial may also affect our business, financial condition, operating results or prospects.

RISKS RELATED TO OUR BUSINESS

Our business, operations and clinical development plans and timelines could be adversely affected by the effects of health epidemics, including the COVID-19 pandemic, on the manufacturing, clinical trial and other business activities performed by us or by third parties with whom we conduct business, including our contract manufacturers, clinical research organizations, or CROs, shippers and others.

Our business could be adversely affected by health epidemics wherever we have clinical trial sites or other business operations. In addition, health epidemics could cause significant disruption in the operations of third-party manufacturers, CROs and other third parties upon whom we rely.

We have implemented work-from-home policies for many of our employees. The effects of our work-from-home policies and travel restrictions may negatively impact productivity, disrupt our business and delay our clinical programs and timelines, the magnitude of which will depend, in part, on the length and severity of the restrictions and other limitations on our ability to conduct our business in the ordinary course. These and similar, and perhaps more severe, disruptions in our operations could negatively impact our business, operating results and financial condition.

We depend on a worldwide supply chain to manufacture products used in our preclinical studies and clinical trials. Quarantines, shelter-in-place and similar government orders, or the expectation that such orders, shutdowns or other restrictions could occur, whether related to COVID-19 or other infectious diseases, could impact personnel at our own manufacturing facilities or third-party manufacturing facilities in the United States and other countries, or the availability or cost of materials, which could disrupt our supply chain.

If our relationships with our suppliers or other vendors are terminated or scaled back as a result of the COVID-19 pandemic or other health epidemics, we may not be able to enter into arrangements with alternative suppliers or vendors or do so on commercially reasonable terms or in a timely manner. Switching or adding additional suppliers or vendors involves substantial cost and requires management time and focus. In addition, there is a natural transition period when a new supplier or vendor commences work. As a result, delays may occur, which could adversely impact our ability to meet our desired clinical development and any future commercialization timelines. Although we carefully manage our relationships with our suppliers and vendors, there can be no assurance that we will not encounter challenges or delays in the future or that these delays or challenges will not harm our business.

In addition, our preclinical studies and clinical trials have been and may continue to be affected by the COVID-19 pandemic. Clinical site initiation, patient enrollment and activities that require visits to clinical sites, including data monitoring, have been and may continue to be delayed due to prioritization of hospital resources toward the COVID-19 pandemic or concerns among patients about participating in clinical trials during a pandemic. Some patients may have difficulty following certain aspects of clinical trial protocols if quarantines impede patient movement or interrupt healthcare services. Similarly, if we are unable to successfully recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened

exposure to COVID-19 or experience additional restrictions by their institutions, city, or state our clinical trial operations could be adversely impacted.

The spread of COVID-19, which has caused a broad impact globally, may materially affect us economically. While the potential economic impact brought by, and the duration of, COVID-19 may be difficult to assess or predict, a widespread pandemic could result in significant disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common stock.

The global COVID-19 pandemic continues to evolve rapidly. The ultimate impact of the COVID-19 pandemic or a similar epidemic is highly uncertain and subject to change. We may experience a material impact on our operations, and we continue to monitor the COVID-19 situation closely.

We will require substantial additional financial resources to continue ongoing development of our product candidates and pursue our business objectives; if we are unable to obtain these additional resources when needed, we may be forced to delay or discontinue our planned operations, including clinical testing of our product candidates.

We have not generated significant revenue and have incurred significant net losses in each year since our inception. For the year ended December 31, 2020, we had a net loss of $80.0 million, and, as of December 31, 2020, we have incurred approximately $764.1 million of accumulated deficit since our inception in 2003. We expect to continue to incur significant operating expenditures and net losses. Further development of our product candidates will require substantial increases in our expenses as we:

- continue to undertake clinical trials for product candidates;
- scale-up the formulation and manufacturing of our product candidates;
- seek regulatory approvals for product candidates;
- work with regulatory authorities to identify and address program-related inquiries;
- implement additional internal systems and infrastructure; and
- hire additional personnel.

As of December 31, 2020, we have approximately $115.1 million of cash and cash equivalents. Given our current development plans, we anticipate our cash resources will be sufficient to fund our operations into the second quarter of 2022 and we have no committed sources of additional capital at this time. The forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses could vary materially and adversely as a result of a number of factors. We have based our estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate. Management does not know whether additional financing will be on terms favorable or acceptable to us when needed, if at all.

Our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, slower than expected progress of our research and development efforts, changes in governmental regulation, competitive and technical advances, costs associated with the development of our product candidates, our ability to secure partnering arrangements, and costs of filing, prosecuting, defending and enforcing our intellectual property rights. The COVID-19 pandemic continues to rapidly evolve and has already resulted in a significant disruption of global financial markets. If the disruption persists and deepens, we could experience an inability to access additional capital, which could in the future negatively affect our operations. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

Further, we may elect to prioritize one or more of our programs and reduce or eliminate our activities on our other programs to preserve our capital resources. Any decision to reduce or eliminate activities for a program may negatively impact the potential for the program, which could have a material adverse effect on our business. For instance, we expect to reduce the amount of resources and capital allocated to our Controlled IL-12 program in 2021 and to actively explore partnership opportunities for the Controlled IL-12 program to support its continued development. In connection with this reduction in spend, we are evaluating potential changes to data collection of long term follow up and reducing other activities. Some of these changes to our planned Controlled IL-12 program may impact the prospects and future development of this program, including our ability to pursue later stage development.

We need to raise additional capital to fund our operations. The manner in which we raise any additional funds may affect the value of your investment in our common stock.

Until such time, if ever, as we can generate substantial revenue, we expect to finance our cash needs through a combination of equity offerings, debt financings and license and collaboration agreements. We do not have any committed external source of funds. The unpredictability of the capital markets may severely hinder our ability to raise capital within the time periods needed or on terms we consider acceptable, if at all. In addition, the ongoing COVID-19 pandemic continues to disrupt the global financial markets, negatively impacted U.S. market conditions and may reduce opportunities for us to seek out additional funding in the future. In particular, a decline in the market price of our common stock could make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate. Moreover, if we fail to advance one or more of our current product candidates into early or later-stage clinical trials, successfully commercialize one or more of our product candidates, or acquire new product candidates for development, we may have difficulty attracting investors that might otherwise be a source of additional financing.

In June 2019, we entered into an Open Market Sale Agreement with Jefferies LLC, as agent, or Jefferies, pursuant to which we may offer and sell, from time to time through Jefferies, shares of our common stock having an aggregate offering price of up to $100.0 million. Shares will be sold pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283), as previously filed with the Securities and Exchange Commission. During the year ended December 31, 2020, we issued and sold an aggregate of 2,814,673 shares of our common stock under the sales agreement for aggregate net proceeds of $13.0 million after deducting commissions and offering expenses of $0.4 million and may sell and issue approximately $80.9 million in additional shares under the sales agreement.

To the extent that we raise additional capital by issuing equity securities such as under our at-the-market program, our existing stockholders' ownership will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our common stockholders. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. Any debt financing that we enter into may involve covenants that restrict our operations. These restrictive covenants may include limitations on additional borrowing and specific restrictions on the use of our assets as well as prohibitions on our ability to create liens, pay dividends, redeem our stock or make investments. Furthermore, the ongoing impact of COVID-19 on global financial markets could make the terms of any available financing less attractive to use and more dilutive to our existing shareholders. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves. If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates or grant licenses on terms that may not be favorable to us.

We have issued or reserved for future issuance shares nearing the maximum number of shares of common stock authorized by our certificate of incorporation. If we are unable to increase the total number of authorized shares, we may be unable to effectively utilize our common stock to establish strategic relationships with other companies, expand our business through acquisitions, raise capital, or offer equity incentives to employees.

Our amended and restated certificate of incorporation authorizes us to issue 250,000,000 shares of common stock. As of February 24, 2020, there were 214,667,023 shares of common stock outstanding and an additional 31,115,329 shares of common stock reserved for issuance pursuant to outstanding stock options and warrants. Though we have no immediate plans to issue additional shares of common stock, other than in connection with our 2020 Equity Incentive Plan, we may need additional shares for business and financial purposes in the future. For example, we will need additional shares of authorized common stock to raise capital to, among other things, fund our operations, conduct and/or complete clinical trials, continue our research and development activities, seek regulatory approval for our product candidates and commercialize our product candidates. In addition, we may wish to issue additional shares in connection with entering into future strategic relationships, or acquiring other businesses, therapeutics or product candidates. Furthermore, our success depends, in part, on our continued ability to attract, retain and motivate highly qualified management and clinical and scientific personnel, and the lack of available unissued shares may also have an adverse impact on our to provide appropriate equity incentives to employees, officers, directors, consultants and/or advisors. If we are unable to increase the total number of authorized shares available to us, our business development and financing opportunities may be limited, and stockholder value may be harmed.

Our plans to develop and commercialize non-viral and viral adoptive cellular therapies based on engineered cytokines and CAR T-cell as well as TCR therapies can be considered as new approaches to cancer treatment, the successful development of which is subject to significant challenges.

We intend to employ technologies such as the technology licensed from MD Anderson pursuant to the MD Anderson License described above, and from PGEN, pursuant to the License Agreement, to pursue the development and commercialization of non-viral and viral adoptive cellular therapies based on cytokines, T-cells, CARs and TCRs, possibly under control of the RTS® and other switch technologies targeting both hematologic and solid tumor malignancies. Because this is a new approach to cancer immunotherapy and cancer treatment generally, developing and commercializing product candidates subjects us to a number of challenges, including:

- obtaining regulatory approval from the FDA and other regulatory authorities that have very limited experience with the commercial development of genetically modified and/or unmodified T-cell therapies for cancer;
- identifying and manufacturing appropriate TCRs from patient and from third parties that can be administered to a patient;
- developing and deploying consistent and reliable processes for engineering a patient's and/or donor's T-cells *ex vivo* and infusing the T-cells back into the patient;
- possibly conditioning patients with chemotherapy in conjunction with delivering each of the potential products, which may increase the risk of adverse side effects of the potential products;
- educating medical personnel regarding the potential side effect profile of each of the potential products, such as the potential adverse side effects related to cytokine release;
- addressing any competing technological and market developments;
- developing processes for the safe administration of these potential products, including long-term follow-up for all patients who receive the potential products;
- sourcing additional clinical and, if approved, commercial supplies for the materials used to manufacture and process the potential products;

- developing a manufacturing process and distribution network with a cost of goods that allows for an attractive return on investment;
- establishing sales and marketing capabilities after obtaining any regulatory approval to gain market acceptance;
- developing therapies for types of cancers beyond those addressed by the current potential products;
- maintaining and defending the intellectual property rights relating to any products we develop;
- and not infringing the intellectual property rights, in particular, the patent rights, of third parties, including competitors, such as those developing T-cell therapies.

We cannot assure you that we will be able to successfully address these challenges, which could prevent us from achieving our research, development and commercialization goals.

Our current product candidates are based on novel technologies and are supported by limited clinical data and we cannot assure you that our current and planned clinical trials will produce data that supports regulatory approval of one or more of these product candidates.

The immuno-oncology effector platform in which we have acquired rights pursuant to our License Agreement with PGEN represents early-stage technology in the field of human oncology biotherapeutics, with Ad-RTS-IL-12 plus veledimex having completed trials, in melanoma, breast cancer and rGBM. Similarly, our genetically modified and/ or non-modified T-cell candidates are supported by limited clinical data, all of which has been generated through trials conducted by MD Anderson, the NCI, and Eden BioCell, not by us. We plan to assume control of the overall clinical and regulatory development of our T-cell product candidates, and any failure to obtain, or delays in obtaining, sponsorship of new INDs, or in filing INDs sponsored by us for these or any other product candidates we determine to advance could negatively affect the timing of our potential future clinical trials. Such an impact on timing could increase research and development costs and could delay or prevent obtaining regulatory approval for our product candidates, either of which could have a material adverse effect on our business.

Further, we did not control the design or conduct of the previous trials. It is possible that the FDA will not accept these previous trials as providing adequate support for future clinical trials, whether controlled by us or third parties, for any of one or more reasons, including the safety, purity, and potency of the product candidate, the degree of product characterization, elements of the design or execution of the previous trials or safety concerns, or other trial results. We may also be subject to liabilities arising from any treatment-related injuries or adverse effects in patients enrolled in these previous trials. As a result, we may be subject to unforeseen third-party claims and delays in our potential future clinical trials. We may also be required to repeat in whole or in part clinical trials previously conducted by MD Anderson or other entities, which will be expensive and delay the submission and licensure or other regulatory approvals with respect to any of our product candidates.

In addition, the results of the limited clinical trials conducted to date may not be replicated in future clinical trials. Our Ad-RTS-IL-12 plus veledimex and genetically modified and non-modified T-cell product candidates, as well as other product candidates, may fail to show the desired safety and efficacy in clinical development, and we cannot assure you that the results of any future trials will demonstrate the value and efficacy of our product candidates. Moreover, there are a number of regulatory requirements that we must satisfy before we can continue clinical trials of CAR+ T, TCRs or other cellular therapy product candidates in the United States. Satisfaction of these requirements will entail substantial time, effort and financial resources. Any time, effort and financial resources we expend on our Ad-RTS-IL-12 plus veledimex and genetically modified and non-modified T-cell product candidates and other early-stage product candidate development programs may adversely affect our ability to continue development and commercialization of our immuno-oncology product candidates.

We report interim data on certain of our clinical trials and we cannot assure you that interim data will be predictive of either future interim results or final study results.

As part of our business, we provide updates related to the development of our product candidates, which may include updates related to interim clinical trial data. To date, our clinical trials have involved small patient populations and because of the small sample size, the interim results of these clinical trials may be subject to substantial variability and may not be indicative of either future interim results or final results.

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

The development and commercialization for new products to treat cancer, including the indications we are pursuing, is highly competitive and considerable competition exists from major pharmaceutical, biotechnology and specialty cancer companies. Many of these companies have more experience in preclinical and clinical development, manufacturing, regulatory, and global commercialization. We are also competing with academic institutions, governmental agencies, and private organizations that are conducting research in the field of cancer.

Our genetically engineering T-cell programs face significant competition in the CAR and TCR technology space from multiple companies and their collaborators. Three such companies, Novartis International AG (Kymriah®), Kite Pharma Inc./Gilead Sciences, Inc. (Yescarta®) and Bristol-Myers Squibb Company (Breyanzi®), have now commercialized autologous CAR+ T cells against CD19. Additional companies developing autologous CAR+ T targets include Bristol-Myers Squibb Company, Precigen, Inc., bluebird bio, Inc., in collaboration with Celgene Corporation, Nanjing Legend Biotech and Janssen Biotech, Inc., a subsidiary of Johnson & Johnson, Gracell Biotechnologies Inc., CARsgen Therapeutics Co. Ltd., Bellicum Pharmaceuticals, Inc., Autolus Therapeutics plc, Exuma Biotech Corp., Mustang Bio, Inc., Crispr Therapeutics AG, Precision Biosciences Inc., Protheragen Inc. and Marker Therapeutics, Inc. Several companies are pursuing the development of allogeneic CAR+ T therapies, including Allogene Therapeutics, Inc. (in collaboration with Pfizer Inc.), Atara Biotherapeutics, Inc. and Cellectis SA (in collaboration with Servier) which may compete with our product candidates.

Our TCR program faces competition from several companies, including from Adaptimmune Therapeutics plc in collaboration with GlaxoSmithKline plc, ArsenalBio, Lyell, bluebird bio, Kite Pharma Inc./Gilead Sciences, Inc., Achilles Therapeutics Limited, Iovance Biotherapeutics, Inc., Immatics Biotechnologies GmbH, Tmunity Therapeutics Inc, Medigene AG, Tactiva Therapeutics, LLC, Takara Bio, Inc., TCR2 Therapeutics Inc., Zelluna Immunotherapy AS, PACT Pharma, Inc. and others. Several companies, including Advaxis Inc./Amgen Inc., BioNTech AG and Gritstone Oncology, Inc., are pursuing vaccine platforms to target neoantigens for solid tumors. Other companies are developing non-viral gene therapies, including Poseida Therapeutics, Inc. and several companies developing CRISPR technology. We also face competition from companies developing therapies using cells other than T cells such as Takeda Pharmaceutical Company, NantKwest Inc., IN8bio, Inc., Fate Therapeutics Inc., and TC BioPharm Limited. We also face competition from companies developing T cells with cytokines such as Repertoire Immune Medicines and Obsidian Therapeutics, Inc. We also face competition from non-cell- based treatments offered by other companies such as Amgen Inc., AstraZeneca plc, Bristol-Myers Squibb Company, Incyte Corporation, Merck & Co., Inc., and Roche Holding AG.

We are initially developing our Controlled IL-12 platform for the treatment of rGBM. Companies that sell marketed drugs for rGBM are Genentech Inc. and Roche Holding AG with Avastin (bevacizumab), a vascular endothelial growth factor directed antibody indicated for the treatment of adults with rGBM. Arbor Pharmaceuticals Inc. markets GLIADEL Wafer, which is indicated in patients with newly diagnosed high-grade malignant glioma as an adjunct to surgery and radiation and is also indicated in patients with recurrent glioblastoma multiforme as an adjunct to surgery. Additionally, Novocure has developed Optune (tumor treating fields) for newly diagnosed and recurrent glioblastoma. Several companies have product candidates in Phase 3 development for the treatment of glioblastoma, including, but not limited to, Cordgenics, LLC, Bayer AG, Kazia Therapeutics Limited, and Kintara Therapeutics, Inc. Several companies and institutions have product candidates currently in Phase 2 clinical trials, including, but not limited to, Abbvie Inc., DNAtrix Therapeutics, Istari

Oncology, Karyopharm and MedImmune LLC/AstraZeneca plc, and other companies are actively developing additional products to treat brain cancer including Mustang Bio Inc. and Northwest Biotherapeutics, Inc. Other competitors with product candidates currently in Phase 2 clinical trials include AbbVie Inc.'s Depatus-M (ABT-414) and DNA-2401, a conditionally replicative adenovirus being evaluated in combination with pembrolizumab Phase 2 study of oncolytic polio/rhinovirus recombinant (PVSRIPO) alone or in combination with lomustine in recurrent WHO Grade IV malignant glioma patients. Also, MedImmune, LLC/AstraZeneca plc's durvalumab was evaluated in a Phase 2 trial in patients with rGBM.

Even if we obtain regulatory approval of potential products, we may not be the first to market and that may affect the price or demand for our potential products. Existing or future competing products may provide greater therapeutic convenience or clinical or other benefits for a specific indication than our products or may offer comparable performance at a lower cost. Additionally, the availability and price of our competitors' products could limit the demand and the price we are able to charge for our potential products. We may not be able to implement our business plan if the acceptance of our potential products is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our potential products, or if physicians switch to other new drug or biologic products or choose to reserve our potential products. Additionally, a competitor could obtain orphan product exclusivity from the FDA with respect to such competitor's product. If such competitor product is determined to be the same product as one of our potential products, that may prevent us from obtaining approval from the FDA for such potential products for the same indication for seven years, except in limited circumstances. If our products fail to capture and maintain market share, we may not achieve sufficient product revenues and our business will suffer.

We compete against fully integrated pharmaceutical companies and smaller companies that are collaborating with larger pharmaceutical companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors have products already approved or in development. In addition, many of these competitors, either alone or together with their collaborative partners, operate larger research and development programs or have substantially greater financial resources than we do, as well as significantly greater experience in:

- developing drugs and biopharmaceuticals;
- undertaking preclinical testing and human clinical trials;
- obtaining FDA and other regulatory approvals of drugs and biopharmaceuticals;
- formulating and manufacturing drugs and biopharmaceuticals; and
- launching, marketing, and selling drugs and biopharmaceuticals.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are 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. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products.

Any termination of our licenses with PGEN, MD Anderson or the National Cancer Institute or our research and development agreements with MD Anderson could result in the loss of significant rights and could harm our ability to develop and commercialize our product candidates.

We are dependent on patents, know-how, and proprietary technology that are licensed from others, particularly MD Anderson, Precigen and the National Cancer Institute, or the NCI, as well as the contributions by MD Anderson under our research and development agreements. Any termination of these licenses or research and development agreements could result in the loss of significant rights and could harm our ability to commercialize our product

candidates. Disputes may also arise between us and these licensors regarding intellectual property subject to a license agreement, including those relating to:

- the scope of rights granted under the applicable license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes, and the technology and processes of PGEN, MD Anderson, the NCI and our other licensors, infringe intellectual property of the licensor that is not subject to the applicable license agreement;
- our right to sublicense patent and other rights to third parties pursuant to our relationships with our licensors and partners;
- whether we are complying with our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our potential products under the MD Anderson License, the License Agreement with PGEN and our patent license agreement with the NCI;
- whether or not our partners are complying with all of their obligations to support our programs under licenses and research and development agreements; and
- the allocation of ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and by us.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements, particularly with MD Anderson, PGEN and the NCI, on acceptable terms, we may be unable to successfully develop and commercialize the affected potential products. We are generally also subject to all of the same risks with respect to protection of intellectual property that we license as we are for intellectual property that we own. If we or our licensors fail to adequately protect this intellectual property, our ability to commercialize potential products under our applicable licenses could suffer. There is a substantial amount of litigation involving patents and other intellectual property rights in the biotechnology and pharmaceutical industries, as well as administrative proceedings for challenging patents, including interference, derivation, and reexamination proceedings before the United States Patent and Trademark Office, or USPTO, or oppositions and other comparable proceedings in foreign jurisdictions. Recently, due to changes in U.S. law referred to as patent reform, new procedures including inter partes review and post-grant review have been implemented, which adds uncertainty to the possibility of challenge to our or our licensors' patents in the future.

We may not be able to retain the rights licensed to us and PGEN by MD Anderson to technologies relating to CAR, T-cell therapies and other related technologies.

Under the MD Anderson License, we, together with PGEN, received an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson including technologies relating to novel CAR+ T cell and
TCR cell therapies arising from the laboratory of Laurence Cooper, M.D., Ph.D., who was then at MD Anderson, as well as either co-exclusive or non-exclusive licenses under certain related technologies. When combined with PGEN's technology suite and Ziopharm's clinically tested RTS® interleukin 12 modules, the resulting proprietary methods and technologies may help realize the promise of genetically modified CAR+ T cells and TCR therapies by controlling cell expansion and activation in the body, minimizing off-target and unwanted on-target effects and toxicity while maximizing therapeutic efficacy. The term of the MD Anderson License expires on the last to occur of (a) the expiration of all patents licensed thereunder, or (b) the twentieth anniversary of the date of the MD Anderson License; provided, however, that following the expiration of the term, we and PGEN shall then have a fully-paid up, royalty free, perpetual, irrevocable and sublicensable license to use the licensed intellectual property thereunder.

After 10 years from the date of the MD Anderson License and subject to a 90-day cure period, MD Anderson will have the right to convert the MD Anderson License into a non-exclusive license if we and PGEN are not using commercially reasonable efforts to commercialize the licensed intellectual property on a case-by-case basis. After five years from the date of the MD Anderson License and subject to a 180-day cure period, MD Anderson will have the right to terminate the MD Anderson License with respect to specific technology(ies) funded by the government

or subject to a third-party contract if we and PGEN are not meeting the diligence requirements in such funding agreement or contract, as applicable. MD Anderson may also terminate the agreement with written notice upon material breach by us or PGEN, if such breach has not been cured within 60 days of receiving such notice. In addition, the MD Anderson License will terminate upon the occurrence of certain insolvency events for both us or PGEN and may be terminated by the mutual written agreement of us, PGEN and MD Anderson.

There can be no assurance that we will be able to successfully perform under the MD Anderson License and if the MD Anderson License is terminated it may prevent us from achieving our business objectives.

We are partly reliant on the National Cancer Institute for research and development and early clinical testing of certain of our product candidates.

A portion of our research and development is being conducted by the NCI under the CRADA entered into in January 2017 and amended in February 2019. Under the CRADA, the NCI, with Dr. Steven A. Rosenberg as the principal investigator, is responsible for conducting a clinical trial using the *Sleeping Beauty* system to express TCRs for the treatment of solid tumors. We have limited control over the nature or timing of the NCI's clinical trial and limited visibility into their day-to-day activities, including with respect to how they are providing and administering T cell therapy. For example, the research we are funding constitutes only a small portion of the NCI's overall research. Additionally, other research being conducted by Dr. Rosenberg may at times receive higher priority than research on our program. Further, in response to the COVID-19 pandemic, the NCI has taken precautionary measures that have delayed the enrollment of the TCR-T clinical trial using the *Sleeping Beauty* system to express TCRs for the treatment of solid tumors. In addition, enrollment in this clinical trial has been temporarily suspended due to issues internal to NCI and unrelated to our technology. The progress and timeline, including the timeline for dosing patients, for this trial are under the control of the NCI.

The CRADA terminates on January 9, 2022 unless it is extended in writing by the parties, and either party may terminate the CRADA by providing at least 60 days' prior written notice to the other party. If the NCI unilaterally terminates the CRADA or the CRADA lapses without any extension, part or all of the research and development of the *Sleeping Beauty* system conducted at the NCI would be suspended, and the research and development of our TCR program would be impacted.

Clinical trials are very expensive, time-consuming, difficult to design, initiate and implement.

Human clinical trials are very expensive and difficult to design, initiate and implement, in part because they are subject to rigorous regulatory requirements. The clinical trial start-up and process itself is also time-consuming and results are inherently uncertain. We estimate that clinical trials of our product candidates will take at least several years to complete. Furthermore, failure can occur at any stage of the trials, and we could encounter problems that cause us to delay the start of, abandon or repeat clinical trials. The commencement and completion of clinical trials may be delayed by several factors, including:

- Additional nonclinical data requests by regulatory agencies;
- Unforeseen safety issues;
- Determination of dosing issues;
- Lack of effectiveness during clinical trials;
- Slower than expected rates of patient recruitment and enrollment;
- Inability to monitor patients adequately during or after treatment;
- Inability or unwillingness of medical investigators to follow our clinical protocols; and
- Regulatory determinations to temporarily or permanently cease enrollment for other reasons not related to patient safety.

Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful. In addition, we or the FDA may suspend our clinical trials at any time if it appears that we are exposing participants to unacceptable health risks or if the FDA finds deficiencies in our IND submission or in the conduct of these trials.

See also "Risks Related to the Clinical Testing, Regulatory Approval and Manufacturing of our Product Candidates—*Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit a BLA, to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business."*

We may not be able to commercialize any products, generate significant revenues, or attain profitability.

To date, none of our product candidates have been approved for commercial sale in any country. The process to develop, obtain regulatory approval for, and commercialize potential product candidates is long, complex, and costly. Unless and until we receive approval from the FDA and/or other foreign regulatory authorities for our product candidates, we cannot sell our products and will not have product revenues. Even if we obtain regulatory approval for one or more of our product candidates, if we are unable to successfully commercialize our products, we may not be able to generate sufficient revenues to achieve or maintain profitability, or to continue our business without raising significant additional capital, which may not be available. Our failure to achieve or maintain profitability could negatively impact the trading price of our common stock.

We have a limited operating history upon which to base an investment decision.

We have not demonstrated an ability to perform the functions necessary for the successful commercialization of any product candidates. The successful commercialization of any product candidates will require us to perform a variety of functions, including:

- Continuing to undertake preclinical development and clinical trials;
- Participating in regulatory approval processes;
- Formulating and manufacturing products; and
- Conducting sales and marketing activities.

Our operations have been limited to organizing and staffing our company, acquiring, developing and securing our proprietary product candidates, and undertaking preclinical and clinical trials of our product candidates. These operations provide a limited basis for you to assess our ability to commercialize our product candidates and the advisability of investing in our securities.

We may not be successful in establishing development and commercialization collaborations, which failure could adversely affect, and potentially prohibit, our ability to develop our product candidates.

Developing biopharmaceutical products and complementary technologies, conducting clinical trials, obtaining marketing approval, establishing manufacturing capabilities and marketing approved products is expensive and, therefore, we anticipate exploring collaborations with third parties that have alternative technologies, more resources and more experience than we do. In situations where we enter into a development and commercial collaboration arrangement for a product candidate or complementary technology, we may also seek to establish additional collaborations for development and commercialization in territories outside of those addressed by the first collaboration arrangement for such product candidate or technology. There are a limited number of potential partners, and we expect to face competition in seeking appropriate partners. If we are unable to enter into any development and commercial collaborations and/or sales and marketing arrangements on reasonable and acceptable terms, if at all, we may be unable to successfully develop and seek regulatory approval for our product candidates and/or effectively market and sell future approved products, if any, in some or all of the territories outside of the United States where it may otherwise be valuable to do so.

We may not be able to successfully manage our growth.

In the future, if we are able to advance our product candidates to the point of, and thereafter through, clinical trials, we will need to expand our development, regulatory, manufacturing, marketing and sales capabilities or contract with third parties to provide for these capabilities. Our future financial performance and our ability to commercialize our product candidates and to compete effectively will depend, in part, on our ability to manage any future growth effectively. To manage this growth, we must expand our facilities, augment our operational, financial and management systems, and hire and train additional qualified personnel. If we are unable to manage our growth effectively, our business may be harmed.

Our business will subject us to the risk of liability claims associated with the use of hazardous materials and chemicals.

Our contract research and development activities may involve the controlled use of hazardous materials and chemicals. Although we believe that our safety procedures for using, storing, handling and disposing of these materials comply with federal, state and local laws and regulations, we cannot completely eliminate the risk of accidental injury or contamination from these materials. In the event of such an accident, we could be held liable for any resulting damages and any liability could have a materially adverse effect on our business, financial condition, and results of operations. In addition, the federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of hazardous or radioactive materials and waste products may require our contractors to incur substantial compliance costs that could materially adversely affect our business, financial condition, and results of operations.

We will need to attract, recruit and hire key executives and we will continue to rely on key scientific and medical advisors, and their knowledge of our business and technical expertise would be difficult to replace.

We have recently experienced significant turnover among our executive team and will need to attract and hire key executives to help lead our company. On February 25, 2021, our Board appointed Heidi Hagen, formerly our lead independent director, as our interim Chief Executive Officer and principal executive officer to replace Dr. Laurence J.N. Cooper. In December 2020, Satyavrat Shukla resigned from his position as our Chief Financial Officer. On February 17, 2021, we appointed Timothy Cunningham as our interim Chief Financial Officer and principal financial officer. We have commenced searches for a new Chief Executive Officer and Chief Financial Officer; however, the marketplace for attracting senior executives is competitive and identifying and hiring new executives may take several months or longer. Management transition is often difficult and inherently causes some loss of institutional knowledge. The departure of these executives or an extended delay finding replacements may adversely affect our business, financial condition, and results of operations. Our ability to execute our business strategies may also be adversely affected by the uncertainty associated with these transitions.

In addition, we may not be able to attract or retain qualified management and commercial, scientific and clinical personnel due to the intense competition for qualified personnel among biotechnology, pharmaceutical and other businesses. If we are not able to attract and retain necessary personnel to 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 are highly dependent on our principal scientific, regulatory, and medical advisors. The loss of any of our key personnel, could result in delays in product development, loss of key personnel or partnerships, and diversion of management resources, which could adversely affect our operating results. We do not carry “key person” life insurance policies on any of our officers or key employees.

If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

We will need to hire additional qualified personnel with expertise in preclinical and clinical research and testing, government regulation, formulation and manufacturing, and eventually, sales and marketing. We compete for

qualified individuals with numerous biopharmaceutical companies, universities, and other research institutions. Competition for such individuals is intense and we cannot be certain that our search for such personnel will be successful. Attracting and retaining qualified personnel will be critical to our success. If we are unable to hire additional qualified personnel, our ability to grow our business may be harmed.

We may incur substantial liabilities and may be required to limit commercialization of our products in response to product liability lawsuits.

The testing and marketing of medical products entail an inherent risk of product liability. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our products, if approved. Even a successful defense would require significant financial and management resources. Regardless of the merit or eventual outcome, liability claims may result in:

- Decreased demand for our product candidates;
- Injury to our reputation;
- Withdrawal of clinical trial participants;
- Withdrawal of prior governmental approvals;
- Costs of related litigation;
- Substantial monetary awards to patients;
- Product recalls;
- Loss of revenue; and
- The inability to commercialize our product candidates.

We currently carry clinical trial insurance and product liability insurance. However, an inability to renew our policies or to obtain sufficient insurance at an acceptable cost could prevent or inhibit the commercialization of pharmaceutical products that we develop, alone or with collaborators.

Our business and operations would suffer in the event of system failures.

Despite the implementation of security measures, our internal computer systems and those of our current and future contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While we are not aware of any such material system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from completed 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 to manufacture our product candidates and conduct clinical trials, and similar events relating to their computer systems could also have a material adverse effect on our business. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development and commercialization of our product candidates could be delayed.

RISKS RELATED TO THE CLINICAL TESTING, REGULATORY APPROVAL AND MANUFACTURING OF OUR PRODUCT CANDIDATES

If we are unable to obtain the necessary U.S. or worldwide regulatory approvals to commercialize any product candidate, our business will suffer.

We may not be able to obtain the approvals necessary to commercialize our product candidates, or any product candidate that we may acquire or develop in the future for commercial sale. We will need FDA approval to

commercialize our product candidates in the United States and approvals from regulatory authorities in foreign jurisdictions equivalent to the FDA to commercialize our product candidates in those jurisdictions. In order to obtain FDA approval of any product candidate, we must submit to the FDA a Biologics License Application, or BLA, demonstrating that the product candidate is safe for humans and effective for its intended use. This demonstration requires significant research and animal tests, which are referred to as preclinical studies, as well as human tests, which are referred to as clinical trials. Satisfaction of the FDA's regulatory requirements typically takes many years, depending upon the type, complexity, and novelty of the product candidate, and will require substantial resources for research, development, and testing. We cannot predict whether our research, development, and clinical approaches will result in products that the FDA will consider safe for humans and effective for their intended uses. The FDA has substantial discretion in the approval process and may require us to conduct additional preclinical and clinical testing or to perform post-marketing studies. The approval process may also be delayed by changes in government regulation, future legislation, or administrative action or changes in FDA policy that occur prior to or during our regulatory review. Delays in obtaining regulatory approvals may:

- Delay commercialization of, and our ability to derive product revenues from, our product candidates;
- Impose costly procedures on us; and
- Diminish any competitive advantages that we may otherwise enjoy.

Even if we comply with all FDA requests, the FDA may ultimately reject one or more of our BLAs. We cannot be sure that we will ever obtain regulatory approval for any of our product candidates. Failure to obtain FDA approval for our product candidates will severely undermine our business by leaving us without a saleable product, and therefore without any potential revenue source, until another product candidate can be developed. There is no guarantee that we will ever be able to develop or acquire another product candidate or that we will obtain FDA approval if we are able to do so.

In foreign jurisdictions, we similarly must receive approval from applicable regulatory authorities before we can commercialize any of our product candidates. Foreign regulatory approval processes generally include all of the risks associated with the FDA approval procedures described above.

Our product candidates are in various stages of clinical trials, which are very expensive and time-consuming. We cannot be certain when we will be able to submit a BLA to the FDA and any failure or delay in completing clinical trials for our product candidates could harm our business.

Our product candidates are in various stages of development and require extensive clinical testing. Notwithstanding our current clinical trial plans for each of our existing product candidates, we may not be able to commence additional trials or see results from these trials within our anticipated timelines. As they enter later stages of development, our product candidates generally will become subject to more stringent regulatory requirements, including the FDA's requirements for chemistry, manufacturing and controls for product candidates entering Phase 3 clinical trials. There is no guarantee the FDA will allow us to commence Phase 3 clinical trials for product candidates studied in early clinical trials.

If the FDA does not allow our product candidates to enter later stage clinical trials, or requires changes to the formulation or manufacture of our product candidates before commencing Phase 3 clinical trials, our ability to further develop, or seek approval for, such product candidates may be materially impacted. As such, we cannot predict with any certainty if or when we might submit a BLA for regulatory approval of our product candidates or whether such a BLA will be accepted. Because we do not anticipate generating revenues unless and until we submit one or more BLAs and thereafter obtain requisite FDA approvals, the timing of our BLA submissions and FDA determinations regarding approval thereof, will directly affect if and when we are able to generate revenues.

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

As with many pharmaceutical and biological products, treatment with our product candidates may produce undesirable side effects or adverse reactions or events, including potential adverse side effects related to cytokine release. If our product candidates or similar products or product candidates under development by third parties demonstrate unacceptable AEs, we may be required to halt or delay further clinical development of our product candidates. The FDA or other foreign regulatory authorities could order us to cease further development of or deny approval of our product candidates for any or all targeted indications. For instance, Ad-RTS-hIL-12 plus veledimex may result in local reactions during the time of injection, including severe swelling and bleeding. If a serious adverse event was to occur in any of our clinical trials, including in our trial of Ad-RTS-hIL-12 plus veledimex for the treatment of DIPG, the FDA may place a hold on the clinical trial for this indication and, potentially, our clinical trials of Ad-RTS-hIL-12 plus veledimex in other indications.

The product-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. In addition, these side effects may not be appropriately or timely recognized or managed by the treating medical staff, particularly outside of the institutions that collaborate with us, as toxicities resulting from our novel technologies may not be normally encountered in the general patient population and by medical personnel. We expect to have to train medical personnel using our product candidates to understand their side effect profiles, both for our planned clinical trials and upon any commercialization of any product candidates. Inadequate training in recognizing or managing the potential side effects of our product candidates could result in adverse effects to patients, including death.

Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by such products, including during any long-term follow-up observation period recommended or required for patients who receive treatment using our products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw approvals of such product;
- regulatory authorities may require additional warnings on the label;
- we may be required to create a risk evaluation and mitigation strategy plan, which could include a medication guide outlining the risks of such side effects for distribution to patients, a communication plan for healthcare providers, and/or other elements to assure safe use;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of the foregoing could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved. Furthermore, any of these occurrences may harm our business, financial condition and prospects significantly.

Our cell-based and gene therapy immuno-oncology products rely on the availability of reagents, specialized equipment, and other specialty materials and infrastructure, which may not be available to us on acceptable terms or at all. For some of these reagents, equipment, and materials, we rely or may rely on sole source vendors or a limited number of vendors, which could impair our ability to manufacture and supply our products.

Manufacturing our product candidates will require many reagents, which are substances used in our manufacturing processes to bring about chemical or biological reactions, 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. We currently depend on a limited number of vendors for certain materials and

equipment used in the manufacture of our product candidates. Some of these suppliers may not have the capacity to support commercial products manufactured under current good manufacturing practices by biopharmaceutical firms or may otherwise be ill-equipped to support our needs. We also 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. Accordingly, we may experience delays in receiving key materials and equipment to support clinical or commercial manufacturing.

For some of these reagents, equipment, infrastructure, and materials, we rely and may in the future rely on sole source vendors or a limited number of vendors. An inability to continue to source product from any of these suppliers, which could be due to 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.

In addition, some of the reagents and products used by us, including in our clinical trials, may be stored at a single vendor. The loss of materials located at a single vendor, or the failure of such a vendor to manufacture clinical product in accordance with our specifications, would impact our ability to conduct ongoing or planned clinical trials and continue the development of our products. Further, manufacturing replacement material may be expensive and require a significant amount of time, which may further impact our clinical programs.

As we continue to develop and scale our manufacturing process, we expect that we will need to obtain rights to and supplies of certain materials and equipment to be used as part of that process. We may not be able to obtain rights to such materials on commercially reasonable terms, or at all, and if we are unable to alter our process in a commercially viable manner to avoid the use of such materials or find a suitable substitute, it would have a material adverse effect on our business. Even if we are able to alter our process so as to use other materials or equipment, such a change may lead to a delay in our clinical development and/or commercialization plans. If such a change occurs for product candidate that is already in clinical testing, the change may require us to perform both ex vivo comparability studies and to collect additional data from patients prior to undertaking more advanced clinical trials.

The results of our clinical trials may not support our product candidate claims.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support approval of our product candidates. The FDA normally expects two randomized, well-controlled Phase 3 pivotal trials in support of approval of a BLA. Success in preclinical testing and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be certain that the results of later clinical trials will replicate the results of prior clinical trials and preclinical testing. The clinical trial process may fail to demonstrate that our product candidates are safe for humans and effective for the indicated uses. This failure would cause us to abandon a product candidate and may delay development of other product candidates. Any delay in, or termination of, our clinical trials will delay the submission of our BLAs with the FDA and, ultimately, our ability to commercialize our product candidates and generate product revenues. In addition, our clinical trials involve small patient populations. Because of the small sample size, the results of these clinical trials may not be indicative of future results.

Our immuno-oncology product candidates are based on a novel technology, which makes it difficult to predict the time and cost of product candidate development and subsequently obtaining regulatory approval. Currently, few gene therapy and cell therapy products have been approved in the United States and Europe.

We are currently focused on developing products in immuno-oncology that employ novel gene expression, control and cell technologies to deliver safe, effective and scalable cell- and viral-based therapies for the treatment of cancer. Due to the novelty of this technology, there can be no assurance that any development problems we experience in the future related to our immuno-oncology platforms will not cause significant delays or unanticipated costs, or that such development problems can be solved. We may also experience unanticipated problems or delays in expanding our manufacturing capacity or transferring our manufacturing process to commercial partners, which may prevent us from completing our clinical trials or commercializing our immuno-oncology product candidates on a timely or profitable basis, if at all.

In addition, the clinical study requirements of the FDA, the EMA and other regulatory agencies and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty and intended use and market of the potential products. The regulatory approval process for novel product candidates such as ours can be more expensive and take longer than for other, better known or extensively studied pharmaceutical or other product candidates. These factors make it difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in either the United States or Europe. Approvals by the EMA may not be indicative of what the FDA may require for approval.

Regulatory requirements governing gene and cell therapy products have changed frequently and may continue to change in the future. For example, the FDA has established the Office of Tissue and Advanced Therapies within its Center for Biologics Evaluation and Research, or CBER, to consolidate the review of gene therapy and related products, and the Cellular, Tissue and Gene Therapies Advisory Committee to advise CBER on its review. Also, before a clinical trial can begin at an institution, that institution's institutional review board, or IRB, and its Institutional Biosafety Committee will have to review the proposed clinical trial to assess the safety of the trial. In addition, adverse developments in clinical trials of gene therapy products conducted by others may cause the FDA or other regulatory bodies to change the requirements for approval of any of our product candidates.

These regulatory review committees and advisory groups and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of these treatment candidates or lead to significant post-approval limitations or restrictions. As we advance our immuno-oncology product candidates, we will be required to consult with these regulatory and advisory groups, and comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of our product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected for oncology product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product to market could decrease our ability to generate sufficient product revenue to maintain our business.

Because we are dependent upon clinical research institutions and other contractors for clinical testing and for research and development activities, the results of our clinical trials and such research activities are, to a certain extent, beyond our control.

We materially rely upon independent investigators and collaborators, such as universities and medical institutions, to conduct our preclinical and clinical trials under agreements with us. These collaborators are not our employees and we cannot control the amount or timing of resources that they devote to our programs. These investigators may not assign as great a priority to our programs or pursue them as diligently as we would if we were undertaking such programs ourselves. If outside collaborators fail to devote sufficient time and resources to our product development programs, or if their performance is substandard, the approval of our FDA applications, if any, and our introduction of new products, if any, will be delayed. These institutions may also have, or implement in the future, policies and procedures that limit their ability to advance our programs. For instance, our partners may take measures in response to the COVID-19 pandemic, that may impact enrollment in our clinical trials. These collaborators may also have relationships with other commercial entities, some of whom may compete with us. If our collaborators assist our competitors to our detriment, our competitive position would be harmed.

Our reliance on third parties to formulate and manufacture our product candidates exposes us to a number of risks that may delay the development, regulatory approval and commercialization of our products or result in higher product costs.

We have limited experience in biopharmaceutical manufacturing. We currently lack the internal resources and expertise to formulate or manufacture our own product candidates and, therefore, contract the manufacture of our product candidates with third parties. We intend to contract with one or more manufacturers to manufacture, supply,

store, and distribute supplies for our clinical trials. If a product candidate we develop or acquire in the future receives FDA approval, we may rely on one or more third-party contractors to manufacture our products. Our anticipated future reliance on a limited number of third-party manufacturers exposes us to the following risks:

- We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers is limited and the FDA must approve any replacement contractor. This approval would require new testing and compliance inspections. In addition, a new manufacturer would have to be educated in, or develop substantially equivalent processes for, production of our products after receipt of FDA approval, if any.
- Our third-party manufacturers might be unable to formulate and manufacture our products in the volume and of the quality required to meet our clinical needs and commercial needs, if any.
- Our future contract manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store, and distribute our products.
- Biopharmaceutical manufacturers are subject to ongoing periodic unannounced inspection by the FDA, the Drug Enforcement Administration and corresponding state and foreign agencies to ensure strict compliance with current good manufacturing practices, or cGMP, and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers' compliance with these regulations and standards.
- If any third-party manufacturer makes improvements in the manufacturing process for our products, we may not own, or may have to share, the intellectual property rights to the innovation.
- Further third-party manufacturers may encounter difficulties in achieving volume production, quality control, and quality assurance and also may experience shortages in qualified personnel and obtaining materials for our product candidates, including delays or shortages due to limited supply or capacity of production facilities as a result of the recent COVID-19 pandemic.
- Our third-party manufacturers may not be able to comply with cGMP regulations or similar regulatory requirements outside the United States. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including clinical holds, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of products, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our products.

Each of these risks could delay our clinical trials, the approval, if any, of our product candidates by the FDA or the commercialization of our product candidates or result in higher costs or deprive us of potential product revenues.

Any product candidate for which we obtain marketing approval could be subject to post-marketing restrictions or withdrawal from the market and we may be subject to penalties if we fail to comply with regulatory requirements or if we experience unanticipated problems with our products, when and if any of them are approved.

Any product candidate for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising and promotional activities for such product, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include, among other things, submissions of safety and other post-marketing information and reports, registration and listing requirements, cGMP requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians 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 the conditions of approval, including the requirement to implement a risk evaluation and mitigation strategy, or REMS, which could include requirements for a restricted distribution system. If any of our product candidates receives marketing approval, the accompanying label may limit the approved uses, which could limit sales of the product.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of our approved products. The FDA closely regulates the post-approval marketing and promotion of products to ensure that they are marketed only for the approved indications and in accordance with the provisions of the approved labeling. However, companies may share truthful and not misleading information that is otherwise consistent with the labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we market our products outside of their approved indications, we may be subject to enforcement action for off-label marketing. Violations of the Federal Food, Drug and Cosmetic Act relating to the promotion of prescription drugs may lead to investigations alleging violations of federal and state health care fraud and abuse laws, as well as state consumer protection laws.

In addition, later discovery of previously unknown AEs or other problems with our products, manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- Litigation involving patients taking our product;
- Restrictions on such products, manufacturers or manufacturing processes;
- Restrictions on the labeling or marketing of a product;
- Restrictions on product distribution or use;
- Requirements to conduct post-marketing studies or clinical trials;
- Warning letters;
- Withdrawal of the products from the market;
- Refusal to approve pending applications or supplements to approved applications that we submit;
- Recall of products;
- Fines, restitution or disgorgement of profits or revenues;
- Suspension or withdrawal of marketing approvals;
- Damage to relationships with existing and potential collaborators;
- Unfavorable press coverage and damage to our reputation;
- Refusal to permit the import or export of our products;
- Product seizure; or
- Injunctions or the imposition of civil or criminal penalties.

Noncompliance with requirements regarding safety monitoring or pharmacovigilance can also result in significant financial penalties. Similarly, failure to comply with U.S. and foreign regulatory requirements regarding the development of products for pediatric populations and the protection of personal health information can also lead to significant penalties and sanctions.

RISKS RELATED TO OUR ABILITY TO COMMERCIALIZE OUR PRODUCT CANDIDATES

If we are unable either to create sales, marketing and distribution capabilities or enter into agreements with third parties to perform these functions, we will be unable to commercialize our product candidates successfully.

We currently have no marketing, sales, or distribution capabilities. If, and when we become reasonably certain that we will be able to commercialize our current or future product candidates, we anticipate allocating resources to the marketing, sales and distribution of our proposed products in North America and in certain other countries; however, we cannot assure that we will be able to market, sell, and distribute our products successfully. Our future success also may depend, in part, on our ability to enter into and maintain collaborative relationships for such capabilities and to encourage the collaborator's strategic interest in the products under development, and such

collaborator's ability to successfully market and sell any such products. Although we intend to pursue certain collaborative arrangements regarding the sale and marketing of certain of our product candidates, there are no assurances that we will be able to establish or maintain collaborative arrangements or, if we are able to do so, whether we would be able to conduct our own sales efforts. There can also be no assurance that we will be able to establish or maintain relationships with third-party collaborators or develop in-house sales and distribution capabilities. To the extent that we depend on third parties for marketing and distribution, any revenues we receive will depend upon the efforts of such third parties, and there can be no assurance that such efforts will be successful. In addition, there can also be no assurance that we will be able to market and sell our product candidates in the United States or overseas.

If we are not able to partner with a third party and are not successful in recruiting sales and marketing personnel or in building a sales and marketing infrastructure, we will have difficulty commercializing our product candidates, which would harm our business. If we rely on pharmaceutical or biotechnology companies with established distribution systems to market our products, we will need to establish and maintain partnership arrangements, and we may not be able to enter into these arrangements on acceptable terms or at all. To the extent that we enter into co-promotion or other arrangements, any revenues we receive will depend upon the efforts of third parties that may not be successful and that will be only partially in our control.

If we cannot compete successfully for market share against other biopharmaceutical companies, we may not achieve sufficient product revenues and our business will suffer.

The market for our product candidates is characterized by intense competition and rapid technological advances. If a product candidate receives FDA approval, it will compete with a number of existing and future products and therapies developed, manufactured and marketed by others. Existing or future competing products may provide greater therapeutic convenience or clinical or other benefits for a specific indication than our products or may offer comparable performance at a lower cost. If our products fail to capture and maintain market share, we may not achieve sufficient product revenues and our business will suffer.

We will compete against fully integrated pharmaceutical companies and smaller companies that are collaborating with larger pharmaceutical companies, academic institutions, government agencies and other public and private research organizations. Many of these competitors have products already approved or in development. In addition, many of these competitors, either alone or together with their collaborative partners, operate larger research and development programs or have substantially greater financial resources than we do, as well as significantly greater experience in:

- Developing drugs and biopharmaceuticals;
- Undertaking preclinical testing and human clinical trials;
- Obtaining FDA and other regulatory approvals of drugs and biopharmaceuticals;
- Formulating and manufacturing drugs and biopharmaceuticals; and
- Launching, marketing, and selling drugs and biopharmaceuticals.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are 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. In addition, our ability to compete may be affected in many cases by insurers or other third-party payors seeking to encourage the use of generic products.

If physicians and patients do not accept and use our product candidates, our ability to generate revenue from sales of our products will be materially impaired.

Even if the FDA and/or foreign equivalents thereof approve our product candidates, physicians and patients may not accept and use them. Acceptance and use of our products will depend upon a number of factors including:

- Perceptions by members of the healthcare community, including physicians, about the safety and effectiveness of our products;
- Pharmacological benefit and cost-effectiveness of our products relative to competing products;
- Availability of coverage and adequate reimbursement for our products from government or other third-party payors;
- Effectiveness of marketing and distribution efforts by us and our licensees and distributors, if any; and
- The price at which we sell our products.

Because we expect sales of our current product candidates, if approved, to generate substantially all of our product revenues for the foreseeable future, the failure of a product to find market acceptance would harm our business and could require us to seek additional financing in order to fund the development of future product candidates.

Our ability to generate product revenues will be diminished if our products do not obtain coverage and adequate reimbursement from payors.

Our ability to commercialize our product candidates, if approved, alone or with collaborators, will depend in part on the extent to which coverage and reimbursement will be available from third-party payors, including government and health administration authorities, private health maintenance organizations and health insurers and other payors.

Patients who are prescribed medicine for the treatment of their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their prescription drugs. Sufficient coverage and adequate reimbursement from third-party payors are critical to new product acceptance. Coverage decisions may depend upon clinical and economic standards that disfavor new drug products when more established or lower cost therapeutic alternatives are already available or subsequently become available. It is difficult to predict the coverage and reimbursement decisions that will be made by third-party payors for novel gene and cell therapy products such as ours. Even if we obtain coverage for our product candidates, the resulting reimbursement payment rates might not be adequate or may require co-payments that patients find unacceptably high. Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates.

In addition, the market for our product candidates for which we may receive regulatory approval will depend significantly on access to third-party payors' drug formularies or lists of medications for which third-party payors provide coverage and reimbursement, which might not include all of the FDA-approved drugs for a particular indication. The industry competition to be included in such formularies often leads to downward pricing pressures on pharmaceutical companies. Also, third-party payors may refuse to include a particular branded drug in their formularies or otherwise restrict patient access to a branded drug when a less costly generic equivalent or other alternative is available.

Third-party payors, whether foreign or domestic, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In addition, in the United States, no uniform policy of coverage and reimbursement for drug products exists among third-party payors. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that requires us to provide scientific and clinical support for the use of our products to each payor separately, with no assurance that approval will be obtained. If we are unable to obtain coverage of and adequate payment levels for our product candidates from third-party payors, physicians may limit how much or under what circumstances they will prescribe or administer our products and

patients may decline to purchase them. This in turn could affect our ability to successfully commercialize our products and impact our profitability, results of operations, financial condition, and future success.

In addition, in many foreign countries, particularly the countries of the EU, the pricing of prescription drugs is subject to government control. In some non-U.S. jurisdictions, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the EU provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the medicinal product on the market. We may face competition for our product candidates from lower-priced products in foreign countries that have placed price controls on pharmaceutical products. In addition, there may be importation of foreign products that compete with our own products, which could negatively impact our profitability.

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

Cancer therapies are sometimes characterized as first line, second line, or third line, and the FDA often approves new therapies initially only for third line use. When cancer is detected early enough, first line therapy is sometimes adequate to cure the cancer or prolong life without a cure. Whenever first line therapy, usually chemotherapy, hormone therapy, surgery, or a combination of these, proves unsuccessful, second line therapy may be administered. Second line therapies often consist of more chemotherapy, radiation, antibody drugs, tumor targeted small molecules, or a combination of these. Third line therapies can include bone marrow transplantation, antibody and small molecule targeted therapies, more invasive forms of surgery, and new technologies. We expect to initially seek approval of our product candidates as a third line therapy for patients who have failed other approved treatments.

Subsequently, for those products that prove to be sufficiently beneficial, if any, we would expect to seek approval as a second line therapy and potentially as a first line therapy, but there is no guarantee that our product candidates, even if approved, would be approved for second line or first line therapy. In addition, we may have to conduct additional clinical trials prior to gaining approval for second line or first line therapy.

Our projections of both the number of people who have the cancers we are targeting, as well as the subset of people with these cancers in a position to receive therapy and who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations, or market research and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these cancers. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates.

Our market opportunities may also be limited by competitor treatments that may enter the market. See also “Risks Related to Our Ability to Commercialize Our Product Candidates—*If we cannot compete successfully for market share against other biopharmaceutical companies, we may not achieve sufficient product revenues and our business will suffer*.”

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

In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory enactments in recent years that change the healthcare system in ways that could impact our future ability to sell our product candidates profitably.

Furthermore, there have been and continue to be a number of initiatives at the federal and state level that seek to reduce healthcare costs. Most significantly, in March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA, which included measures that have significantly changed the way healthcare is financed by both governmental and private insurers. Among the provisions of the ACA of importance to the pharmaceutical industry are the following:

- Created an annual, nondeductible fee on any entity that manufactures or imports certain branded prescription drugs and biologic agents, apportioned among these entities according to their market share in certain government healthcare programs;
- Increased the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13% of the average manufacturer price for most branded and generic drugs, respectively;
- Created a new Medicare Part D coverage gap discount program, in which manufacturers must now agree to offer 70% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- Extended manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- Created new methodologies by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, and for drugs that are line extensions;
- Expanded eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals with income at or below 133% of the Federal Poverty Level, thereby potentially increasing both the volume of sales and manufacturers' Medicaid rebate liability;
- Expanded the entities eligible for discounts under the Public Health Service pharmaceutical pricing program;
- Created a new requirement to annually report drug samples that certain manufacturers and authorized distributors provide to physicians;
- Expanded healthcare fraud and abuse laws, including the False Claims Act and the federal Anti-Kickback Statute, new government investigative powers, and enhanced penalties for noncompliance;
- Created a licensure framework for follow-on biologic products;
- Created new requirements under the federal Physician Payments Sunshine Act for certain drug manufacturers to annually report information related to payments and other transfers of value made to physicians, as defined by such law, and teaching hospitals as well as ownership or investment interests held by physicians and their immediate family members;
- Created a Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research; and
- Established a Center for Medicare & Medicaid Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

There have been executive, legal and political challenges to certain aspects of the ACA. For example, President Trump signed several executive orders and other directives designed to delay, circumvent, or loosen certain requirements mandated by the ACA. Concurrently, Congress considered legislation to repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. In December 2017,

Congress repealed the tax penalty, effective January 1, 2019, for an individual's failure to maintain ACA-mandated health insurance as part of the Tax Cuts and Jobs Act of 2017, or Tax Act. Further, the 2020 federal spending package permanently eliminated effective January 1, 2020, the ACA-mandated "Cadillac" tax on high-cost employer-sponsored health coverage and medical device tax and effective January 1, 2021 also eliminated the health insurance tax. The Bipartisan Budget Act of 2018, or the BBA, among other things, amended the ACA, effective January 1, 2019, to increase from 50 percent to 70 percent the point-of-sale discount that is owed by pharmaceutical manufacturers who participate in Medicare Part D and close the coverage gap in most Medicare drug plans, commonly referred to as the "donut hole". On December 14, 2018, a Texas U.S. District Court Judge ruled that ACA is unconstitutional in its entirety because the "individual mandate" was repealed by Congress as part of the Tax Act. Additionally, on December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court ruling that the individual mandate was unconstitutional and remanded the case back to the District Court to determine whether the remaining provisions of the ACA are invalid as well. On March 2, 2020, the United States Supreme Court is currently reviewing this case, but it is unknown when a decision will be reached. Although the Supreme Court has not yet ruled on the constitutionality of the ACA, on January 28, 2021, President Biden issued an executive order to initiate a special enrollment period from February 15, 2021 through May 15, 2021 for purposes of obtaining health insurance coverage through the ACA marketplace. The executive order also instructs certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is unclear how the Supreme Court ruling, other such litigation and the healthcare reform measures of the Biden administration will impact ACA and our business. The ultimate content, timing or effect of any healthcare reform measures on the U.S. healthcare industry is unclear.

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Further, there has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices. As a result, there have been several U.S. Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drugs. At the federal level, the Trump administration used several means to propose or implement drug pricing reform, including through federal budget proposals, executive orders and policy initiatives. For example, on July 24, 2020 and September 13, 2020, the Trump administration announced several executive orders related to prescription drug pricing that attempt to implement several of the administration's proposals.

The FDA also released a final rule, effective November 30, 2020, implementing a portion of the importation executive order providing guidance for states to build and submit importation plans for drugs from Canada. Further, on November 20, 2020, HHS finalized a regulation removing 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 implementation of the rule has been delayed by the Biden administration from January 1, 2022 to January 1, 2023 in response to ongoing litigation. The rule also creates a new safe harbor for price reductions reflected at the point-of-sale, as well as a new safe harbor for certain fixed fee arrangements between pharmacy benefit managers and manufacturers, the implementation of which have also been delayed pending review by the Biden administration until March 22, 2021. On November 20, 2020, CMS issued an interim final rule implementing President Trump's Most Favored Nation executive order, which would tie Medicare Part B payments for certain physician-administered drugs to the lowest price paid in other economically advanced countries, effective January 1, 2021. On December 28, 2020, the United States District Court in Northern California issued a nationwide preliminary injunction against implementation of the interim final rule. However, it is unclear whether the Biden administration will work to reverse these measures or pursue similar policy initiatives. Individual states in the United States have also increasingly passed legislation and implemented 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.

It is possible that additional governmental action is taken in response to the COVID-19 pandemic.

We expect that the ACA, as well as other healthcare reform measures that may be adopted in the future, particularly in light of the new presidential administration, which may result in more rigorous coverage criteria and in additional downward pressure on the price that we may receive for any approved product. 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 if we receive regulatory approval, commercialize our products.

If we fail to comply with federal and state healthcare laws, including fraud and abuse and health information privacy and security laws, we could face substantial penalties and our business, results of operations, financial condition and prospects could be adversely affected.

As a pharmaceutical company, even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, certain federal and state healthcare laws and regulations pertaining to fraud and abuse and patients' rights are and will be applicable to our business. For example, we could be subject to healthcare fraud and abuse and patient privacy regulation by both the federal government and the states in which we conduct our business. The laws that may affect our ability to operate include, among others:

- The federal Anti-Kickback Statute, which regulates our business activities, including our marketing practices, educational programs, pricing policies, and relationships with healthcare providers or other

entities, by prohibiting, among other things, soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, either the referral of an individual or the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;

- Federal civil and criminal false claims laws, including the False Claims Act which 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 civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;
- The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created new federal civil and criminal statutes that prohibit, among other things, executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their implementing regulations, which imposes certain requirements relating to the privacy, security and transmission of individually identifiable health information on entities and individuals subject to the law including certain healthcare providers, health plans, and healthcare clearinghouses, known as covered entities, as well as individuals and entities that perform services for them which involve the use, or disclosure of, individually identifiable health information, known as business associates and their subcontractors that use, disclose or otherwise process individually identifiable health information;
- Requirements under the Physician Payments Sunshine Act to report annually to CMS certain financial arrangements with physicians, (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as defined in the ACA and its implementing regulations, including reporting any "transfer of value" made or distributed to teaching hospitals, and physicians, as defined by such law and reporting any ownership and investment interests held by physicians and their immediate family members and applicable group purchasing organizations during the preceding calendar year, which will be expanded beginning in 2022, to require applicable manufacturers to report such information regarding its relationships with physician assistants, nurse practitioners, clinical nurse specialists, anesthesiologist assistants, certified registered nurse anesthetists and certified nurse midwives during the previous year; and
- State and foreign law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government that otherwise restricts certain payments that may be made to healthcare providers and entities; state laws that require drug manufacturers to report information related to payments and other transfer of value to physicians and other healthcare providers and entities; state laws that require the reporting of information related to drug pricing; state and local laws that require the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

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, including our consulting agreements with physicians, some of whom receive stock or stock options as compensation for their services, could be subject to challenge under one or more of such laws. In addition, recent health care reform legislation has further strengthened these laws. For example, the ACA, among other things, amended the intent requirement of the federal Anti-Kickback Statute and certain criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. Moreover, the ACA provides that 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 False Claims Act.

To the extent that any of our product candidates is ultimately sold in a foreign country, we may be subject to similar foreign laws and regulations.

Efforts to ensure that our business arrangements comply with applicable healthcare laws involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, we may be subject to significant penalties, including administrative, civil and criminal penalties, damages, fines, exclusion from participation in United States federal or state health care programs, such as Medicare and Medicaid, disgorgement, imprisonment, integrity oversight and reporting obligations, and the curtailment or restructuring of our operations any of which could materially adversely affect our ability to operate our business and our financial results. Although compliance programs can mitigate the risk of investigation and prosecution for violations of these laws, the risks cannot be entirely eliminated. Any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security and fraud laws may prove costly.

Our immuno-oncology product candidates may face competition in the future from biosimilars.

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, provides an abbreviated pathway for the approval of follow-on biological products. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. However, there is a risk that the U.S. Congress could amend the BPCIA to significantly shorten this exclusivity period, potentially creating the opportunity for generic competition sooner than anticipated. Further, this data exclusivity does not prevent another company from developing a product that is highly similar to the original branded product, generating its own data and seeking approval. Data exclusivity only assures that another company cannot rely upon the data within the innovator's application to support the biosimilar product's approval.

We rely significantly on information technology and any failure, inadequacy, interruption or security lapse of that technology or loss of data, including any cyber security incidents, could compromise sensitive information related to our business, prevent us from accessing critical information or expose us to liability which could harm our ability to operate our business effectively and adversely affect our business and reputation.

In the ordinary course of our business, we, our contract research organizations and other third parties on which we rely collect and store sensitive data, including legally protected patient health information, personally identifiable information about our employees, intellectual property, and proprietary business information. We manage and maintain our applications and data utilizing on-site systems. These applications and data encompass a wide variety of business-critical information including research and development information and business and financial information.

The secure processing, storage, maintenance and transmission of this critical information is vital to our operations and business strategy. Because of the work-from-home policies we implemented due to COVID-19, information that is normally protected, including company confidential information, may be less secure. Additionally, despite the implementation of security measures, our internal computer systems and those of third parties with which we contract are vulnerable to damage from cyber-attacks, computer viruses, breaches, unauthorized access, interruptions due to employee error or malfeasance or other disruptions, or damage from natural disasters, terrorism, war and telecommunication and electrical failures. In addition, due to the COVID-19 pandemic, we have enabled many of our employees to work remotely, which may make us more vulnerable to cyberattacks. Any such event could compromise our networks and the information stored there could be accessed

by unauthorized parties, publicly disclosed, lost or stolen. We have measures in place that are designed to detect and respond to such security incidents and breaches of privacy and security mandates. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information, government enforcement actions and regulatory penalties. Unauthorized access, loss or dissemination could also disrupt our operations, including our ability to conduct research, development and commercialization activities, process and prepare company financial information, manage various general and administrative aspects of our business and damage our reputation, in addition to possibly requiring substantial expenditures of resources to remedy, any of which could adversely affect our business. The loss of clinical trial data could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. In addition, there can be no assurance that we will promptly detect any such disruption or security breach, if at all. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and our research, development and commercialization efforts could be delayed.

RISKS RELATED TO OUR INTELLECTUAL PROPERTY

If we or our licensors fail to adequately protect or enforce our intellectual property rights or secure rights to patents of others, the value of our intellectual property rights would diminish and our ability to successfully commercialize our products may be impaired.

Our success, competitive position, and future revenues will depend in part on our ability and the abilities of our licensors to obtain and maintain patent protection for our products, methods, processes and other technologies, to preserve confidential information, including trade secrets, to prevent third parties from infringing our proprietary rights, and to operate without infringing the proprietary rights of third parties.

To date, we have exclusive rights in the field of cancer treatment to certain U.S. and foreign intellectual property with respect to certain cell therapy and related technologies from MD Anderson and NCI, as well as with respect to the PGEN technology, including Ad-RTS-IL-12 plus veledimex. Under the MD Anderson License, future filings and applications require the agreement of each of MD Anderson, PGEN and us, and MD Anderson has the right to control the preparation and filing of additional patent applications unless the parties agree that we or PGEN may prosecute the application directly. Although under the agreement MD Anderson has agreed to review and incorporate any reasonable comments that we or PGEN may have regarding licensed patents and patent applications, we cannot guarantee that our comments will be solicited or followed. Under the patent license agreement with the NCI, the NCI is responsible for the preparation, filing, prosecution, and maintenance of patent applications or patents licensed to us. Although under the agreement, the NCI is required to consult with us in the preparation, filing, prosecution, and maintenance of all patent applications or patents licensed to us, we cannot guarantee that our comments will be solicited or followed. Under our License Agreement with PGEN, PGEN has the right, but not the obligation, to prepare, file, prosecute, and maintain the patents and patent applications licensed to us and shall bear any related costs incurred by it in regard to those actions. PGEN is required to consult with us and keep us reasonably informed of the status of the patents and patent applications licensed to us, and to confer with us prior to submitting any related filings and correspondence. Although under the agreement PGEN has agreed to consider in good faith and consult with us regarding any comments we may have regarding these patents and patent applications, we cannot guarantee that our comments will be solicited or followed. Without direct control of the in-licensed patents and patent applications, we are dependent on MD Anderson, the NCI or PGEN, as applicable, to keep us advised of prosecution, particularly in foreign jurisdictions where prosecution information may not be publicly available. We anticipate that we, MD Anderson, the NCI and PGEN will file additional patent applications both in the United States and in other countries. However, we cannot predict or guarantee:

- The degree and range of protection any patents will afford us against competitors, including whether third parties will find ways to invalidate or otherwise circumvent our patents;
- If and when patents will be issued;

- Whether or not others will obtain patents claiming subject matter related to or relevant to our product candidates; or
- Whether we will need to initiate litigation or administrative proceedings that may be costly whether we win or lose.

The patent prosecution process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost, in a timely manner, or in all jurisdictions. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, in some circumstances, we do not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, covering technology that we license from third parties. We may also require the cooperation of our licensors in order to enforce the licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. In addition, the laws of foreign countries may not protect our rights to the same extent as the laws of the United States and we may fail to seek or obtain patent protection in all major markets. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all.

Changes in patent laws or in interpretations of patent laws in the United States and other countries may diminish the value of our intellectual property or narrow the scope of our patent protection. In September 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law, resulting in a number of significant changes to United States patent law. These changes include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. In addition, the United States Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the value of patents, once obtained, and with regard to our ability to obtain patents in the future. As the USPTO continues to implement the Leahy-Smith Act, and as the federal courts have the opportunity to interpret the Leahy-Smith Act, the laws and regulations governing patents, and the rules regarding patent procurement 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.

Certain technologies utilized in our research and development programs are already in the public domain. Moreover, a number of our competitors have developed technologies, filed patent applications or obtained patents on technologies, compositions and methods of use that are related to our business and may cover or conflict with our owned or licensed patent applications, technologies or product candidates. Such conflicts could limit the scope of the patents that we may be able to obtain or may result in the rejection of claims in our patent applications. Because patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, or in some cases not at all, and because publications of discoveries in the scientific literature often lag behind actual discoveries, neither we nor our licensors can be certain that others have not filed or maintained patent applications for technology used by us or covered by our pending patent applications without our being aware of these applications. Therefore, we cannot know with certainty whether we were the first to make the inventions claimed in our owned patents or pending patent applications, or that we were the first to file for patent protection of such inventions, nor can we know whether those from whom we license patents were the first to make the inventions claimed or were the first to file. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or products, in whole or in part, or which effectively prevent others from commercializing competitive technologies and

products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. In addition, our own earlier filed patents and applications or those of MD Anderson, NCI or PGEN may limit the scope of later patents we obtain or may result in the rejection of claims in our later filed patent applications. If third parties filed patent applications or obtained patents on technologies, compositions and methods of use that are related to our business and that cover or conflict with our owned or licensed patent applications, technologies or product candidates, we may be required to challenge such protection, terminate or modify our programs impacted by such protection or obtain licenses from such third parties, which might not be available on acceptable terms, or at all.

Even if our owned and licensed patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our owned or licensed patents by developing similar or alternative technologies or products in a non-infringing manner.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If we are unable to protect the confidentiality of our confidential information, our business and competitive position would be harmed.

Our success also depends upon the skills, knowledge, and experience of our scientific and technical personnel, our consultants and advisors, as well as our licensors and contractors. To help protect our proprietary know-how and our inventions for which patents may be unobtainable or difficult to obtain, and to maintain our competitive position, we rely on trade secret protection and confidentiality agreements. To this end, it is our general policy to require our employees, consultants, advisors, and contractors to enter into agreements that prohibit the disclosure of confidential information and, where applicable, require disclosure and assignment to us of the ideas, developments, discoveries, and inventions important to our business. These agreements may not provide adequate protection for our trade secrets, know-how, confidential information or other proprietary information in the event of any unauthorized use or disclosure or the lawful development by others of such information. Moreover, we may not be able to obtain adequate remedies for any breaches of these agreements. Our trade secrets or other confidential information may also be obtained by third parties by other means, such as breaches of our physical or computer security systems. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret or other confidential information is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. If any of our trade secrets or other confidential information were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them, or those to whom they communicate it, from using that technology or information to compete with us. If any of our trade secrets, know-how or other proprietary information is disclosed, the value of our trade secrets, know-how and other proprietary rights would be significantly impaired and our business and competitive position would suffer.

Third-party claims of intellectual property infringement would require us to spend significant time and money and could prevent us from developing or commercializing our products.

In order to protect or enforce patent rights, we may initiate patent infringement litigation against third parties. Similarly, we may be sued by others for patent infringement. We also may become subject to proceedings

conducted in the United States Patent and Trademark Office, including interference proceedings to determine the priority or derivation of inventions, or post-grant review, inter partes review, or reexamination proceedings reviewing the patentability of our patented claims. In addition, any foreign patents that are granted may become subject to opposition, nullity, or revocation proceedings in foreign jurisdictions having such proceedings. The defense and prosecution, if necessary, of intellectual property actions are costly and divert technical and management personnel away from their normal responsibilities.

Our commercial success depends upon our ability, and the ability of our collaborators, to develop, manufacture, market and sell our product candidates without infringing the proprietary rights of third parties. There is considerable intellectual property litigation in the biotechnology and pharmaceutical industries. While no such litigation has been brought against us and we have not been held by any court to have infringed a third party's intellectual property rights, we cannot guarantee that our products or use of our products do not infringe third-party patents. It is also possible that we have failed to identify relevant third-party patents or applications. For example, applications filed before November 29, 2000 and certain applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Patent applications in the United States and elsewhere are published approximately 18 months after the earliest filing, which is referred to as the priority date. Therefore, patent applications covering our products or technology could have been filed by others without our knowledge. Additionally, pending patent applications which have been published can, subject to certain limitations, be later amended in a manner that could cover our products or the use of our products.

Our research, development and commercialization activities, as well as any product candidates or products resulting from these activities, may infringe or be claimed to infringe patents or patent applications under which we do not hold licenses or other rights. A patent does not protect its owner from a claim of infringement of another owner's patent. Therefore, our patent position cannot and does not provide any assurance that we are not infringing the patent rights of another.

The patent landscape in the field of immuno-oncology is particularly complex. We are aware of numerous United States and foreign patents and pending patent applications of third parties that cover compositions, methods of use and methods of manufacture of immuno-oncology products. In addition, there may be patents and patent applications in the field of which we are not aware. The technology we license from MD Anderson, NCI and PGEN is early-stage technology and we are in the process of designing and developing products using this technology. Although we will seek to avoid pursuing the development of products that may infringe any patent claims that we believe to be valid and enforceable, we may fail to do so. Moreover, given the breadth and number of claims in patents and pending patent applications in the field of immuno-oncology and the complexities and uncertainties associated with them, third parties may allege that we are infringing patent claims even if we do not believe such claims to be valid and enforceable.

If a claim for patent infringement is asserted, there can be no assurance that the resolution of the claim would permit us to continue marketing the relevant product on commercially reasonable terms, if at all. We may not have sufficient resources to bring these actions to a successful conclusion. If we do not successfully defend any infringement actions to which we become a party or are unable to have infringed patents declared invalid or unenforceable, we may have to pay substantial monetary damages, which can be tripled if the infringement is deemed willful, or we may be required to discontinue or significantly delay commercialization and development of the affected products.

Any legal action against us or our collaborators claiming damages and seeking to enjoin developmental or marketing activities relating to affected products could, in addition to subjecting us to potential liability for damages, require us or our collaborators to obtain licenses to continue to develop, manufacture, or market the affected products. Such a license may not be available to us on commercially reasonable terms, if at all.

An adverse determination in a proceeding involving our owned or licensed intellectual property may allow entry of substitutes, including biosimilar or generic substitutes, for our products.

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

Periodic maintenance fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. In such an event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

We license rights to products and technology that are important to our business, and we expect to enter into additional licenses in the future. For instance, we have exclusively licensed patents and patent applications under the MD Anderson License and our patent license agreement with the NCI as well as under our License Agreement with PGEN. Under these agreements, we are subject to a range of commercialization and development, sublicensing, royalty, patent prosecution and maintenance, insurance and other obligations.

Any failure by us to comply with any of these obligations or any other breach by us of our license agreements could give the licensor the right to terminate the license in whole, terminate the exclusive nature of the license or bring a claim against us for damages. Any such termination or claim could have a material adverse effect on our financial condition, results of operations, liquidity or business. Even if we contest any such termination or claim and are ultimately successful, such dispute could lead to delays in the development or commercialization of potential products and result in time-consuming and expensive litigation or arbitration. On termination we may be required to license to the licensor any related intellectual property that we developed.

In addition, in certain cases, the rights licensed to us are rights of a third party licensed to our licensor. In such instances, if our licensors do not comply with their obligations under such licenses, our rights under our license agreements with our licensor may be adversely affected.

We may be subject to claims by third parties asserting that our employees or we have misappropriated their intellectual property or claiming ownership of what we regard as our own intellectual property.

Many of our employees were previously employed at universities or other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that these employees or we have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. Litigation may be necessary to defend against these claims.

In addition, while it is our policy to require our employees and contractors who may be involved in the development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who in fact develops intellectual property that we regard as our own. Our and their assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims against third parties, or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property.

If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in prosecuting or defending against such claims, litigation could result in substantial costs and be a distraction to management.

OTHER RISKS RELATED TO OUR COMPANY

Our stock price has been, and may continue to be, volatile.

The market price for our common stock is volatile and may fluctuate significantly in response to a number of factors, most of which we cannot control, including:

- Price and volume fluctuations in the overall stock market;
- Changes in operating results and performance and stock market valuations of other biopharmaceutical companies generally, or those that develop and commercialize cancer drugs in particular;
- Market conditions or trends in our industry or the economy as a whole;
- Preclinical studies or clinical trial results;
- Public concern as to the safety of drugs developed by us or others;
- The financial or operational projections we may provide to the public, any changes in these projections or our failure to meet these projections;
- Comments by securities analysts or changes in financial estimates or ratings by any securities analysts who follow our common stock, our failure to meet these estimates or failure of those analysts to initiate or maintain coverage of our common stock;
- The public's response to press releases or other public announcements by us or third parties, including our filings with the SEC, as well as announcements of the status of development of our products, announcements of technological innovations or new therapeutic products by us or our competitors, announcements regarding collaborative agreements and other announcements relating to product development, litigation and intellectual property impacting us or our business;
- Government regulation;
- FDA determinations on the approval of a product candidate BLA submission;
- The sustainability of an active trading market for our common stock;
- Future sales of our common stock by us, our executive officers, directors and significant stockholders;
- Announcements of mergers or acquisition transactions;
- Our inclusion or deletion from certain stock indices;
- Developments in patent or other proprietary rights;
- Changes in reimbursement policies;
- Announcements of medical innovations or new products by our competitors;
- Announcements of changes in our senior management or directors;
- General economic, industry, political and market conditions, including, but not limited to, the ongoing impact of the COVID 19 pandemic;
- Other events or factors, including those resulting from war, incidents of terrorism, natural disasters or responses to these events; and
- Changes in accounting principles.

In addition, the stock market in general and our stock in particular from time to time experiences significant price and volume fluctuations unrelated to the operating performance of particular companies, including in connection with the ongoing COVID-19 pandemic, which has resulted in decreased stock prices for many companies notwithstanding the lack of a fundamental change in their underlying business models or prospects. Public debt

and equity markets, and in particular the Nasdaq Global Select Market, have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many biopharmaceutical companies.

Stock prices of many biopharmaceutical companies have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies. In the past, stockholders have instituted securities class action litigation following periods of market volatility. If we were involved in securities litigation, we could incur substantial costs and our resources, and the attention of management could be diverted from our business.

Anti-takeover provisions in our charter documents and under Delaware law may make an acquisition of us, which may be beneficial to our stockholders, more difficult.

Provisions of our amended and restated certificate of incorporation and bylaws, as well as provisions of Delaware law, could make it more difficult for a third party to acquire us, even if doing so would benefit our stockholders. These provisions authorize the issuance of "blank check" preferred stock that could be issued by our board of directors to increase the number of outstanding shares and hinder a takeover attempt, and limit who may call a special meeting of stockholders. In addition, Section 203 of the Delaware General Corporation Law generally prohibits a publicly-held Delaware corporation from engaging in a business combination with a party that owns at least 15% of its common stock unless the business combination is approved by the company's board of directors before the person acquires the 15% ownership stake or later by its board of directors and two-thirds of its stockholders. Section 203 could have the effect of delaying, deferring or preventing a change in control that our stockholders might consider to be in their best interests.

Because we do not expect to pay dividends, you will not realize any income from an investment in our common stock unless and until you sell your shares at profit.

We have never paid dividends on our common stock and we do not anticipate that we will pay any dividends for the foreseeable future. Accordingly, any return on an investment in us will be realized, if at all, only when you sell shares of our common stock.

Our ability to use net operating loss carryforwards and research tax credits to reduce future tax payments may be limited or restricted.

We have generated significant net operating loss carryforwards, or NOLs, and research and development tax credits, or R&D credits, as a result of our incurrence of losses and our conduct of research activities since inception. We generally are able to carry NOLs and R&D credits forward to reduce our tax liability in future years. However, our ability to utilize the NOLs and R&D credits is subject to the rules of Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code, respectively. Those sections generally restrict the use of NOLs and R&D credits after an "ownership change." An ownership change occurs if, among other things, the stockholders (or specified groups of stockholders) who own or have owned, directly or indirectly, 5% or more of a corporation's common stock or are otherwise treated as 5% stockholders under Section 382 of the code and the United States Treasury Department regulations promulgated thereunder increase their aggregate percentage ownership of that corporation's stock by more than 50 percentage points over the lowest percentage of the stock owned by these stockholders over the applicable testing period. In the event of an ownership change, Section 382 imposes an annual limitation on the amount of taxable income a corporation may offset with NOL carry forwards and Section 383 imposes an annual limitation on the amount of tax a corporation may offset with business credit (including the R&D credit) carry forwards.

We may have experienced an "ownership change" within the meaning of Section 382 in the past and there can be no assurance that we will not experience additional ownership changes in the future. As a result, our NOLs and business credits (including the R&D credit) may be subject to limitations and we may be required to pay taxes earlier and in larger amounts than would be the case if our NOLs or R&D credits were freely usable.

If securities and/or industry analysts fail to continue publishing research about our business, if they change their recommendations adversely or if our results of operations do not meet their expectations, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline. In addition, it is likely that in some future period our operating results will be below the expectations of securities analysts or investors. If one or more of the analysts who cover us downgrade our stock, or if our results of operations do not meet their expectations, our stock price could decline.

Our business could be negatively affected as a result of the actions of activist stockholders.

Recently, we were engaged in a consent solicitation led by WaterMill Asset Management Corp. where two new directors were added to our Board. We could experience other stockholder activism in the future, including another consent solicitation or a proxy contest. Activist shareholders may advocate for certain governance and strategic changes at our company. In the event of stockholder activism, particularly with respect to matters which our Board, in exercising their fiduciary duties, disagree with or have determined not to pursue, our business could be adversely affected because responding to actions by activist stockholders can be costly and time-consuming, disrupting our operations and diverting the attention of management, and perceived uncertainties as to our future direction may result in the loss of potential business opportunities and may make it more difficult to attract and retain qualified personnel, business partners, and customers.

In addition, if faced with a consent solicitation or proxy contest, we may not be able to respond successfully to the contest or dispute, which would be disruptive to our business. If individuals are elected to our Board with a differing agenda, our ability to effectively and timely implement our strategic plan and create additional value for our stockholders may be adversely affected.

Our principal stockholders, executive officers and directors have substantial control over the company, which may prevent you and other stockholders from influencing significant corporate decisions and may harm the market price of our common stock.

As of December 31, 2020, our executive officers, directors and holders of five percent or more of our outstanding common stock, beneficially owned, in the aggregate, 49.6% of our outstanding common stock. These stockholders may have interests that conflict with our other stockholders and, if acting together, have the ability to influence the outcome of matters submitted to our stockholders for approval, including the election and removal of directors and any merger, consolidation or sale of all or substantially all of our assets. Accordingly, this concentration of ownership may harm the market price of our common stock by:

- Delaying, deferring or preventing a change in control;
- Impeding a merger, consolidation, takeover or other business combination involving us; or
- Discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us.

In addition, this significant concentration of stock ownership may adversely affect the trading price of our common stock should investors perceive disadvantages in owning shares of common stock in a company that has such concentrated ownership.

We previously identified a material weakness in our internal control over financial reporting for the year ended December 31, 2019, which we believe has been fully remediated. If we have inadequately remediated this material weakness, or we otherwise fail to develop, implement and maintain an effective system of internal controls in future periods, our ability to report our financial condition or results of operations could be adversely affected and may result in material misstatements of our financial statements or could have a material adverse effect on our business and trading price of our securities.

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, the Sarbanes-Oxley Act of 2002 and the rules and regulations of The Nasdaq Global Market. Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we are required to perform system and process evaluation and testing of our internal control over financial reporting to allow our management to report on the effectiveness of our internal control over financial reporting. We are also required to have our independent registered public accounting firm issue an opinion on the effectiveness of our internal control over financial reporting on an annual basis.

In connection with the audit of our consolidated financial statements as of and for the year ended December 31, 2019, we identified a material weakness in our internal control over financial reporting. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of our consolidated financial statements will not be prevented or detected on a timely basis. The material weakness was related to the design and maintenance of effective controls relating to the monitoring and oversight of expensing third party clinical trial costs. Specifically, our internal controls were not designed effectively to provide reasonable assurance regarding the accurate and timely evaluation of the amount of third-party costs to record.

To remediate the material weakness described above and prevent similar deficiencies in the future, throughout 2020 we added additional controls and procedures, including: (i) implementation of monthly meeting between the finance and clinical departments to review accruals, material contracts, pre-authorized work and material pass-through costs, (ii) monthly contract meetings with the legal department to review the terms of material contracts, including leases, and (iii) engaging a third-party to perform an evaluation to ascertain whether the components of internal control were present and functioning throughout the year ended December 31, 2020.

During the fourth quarter of 2020, we completed our testing of the operating effectiveness of the implemented controls and found them to be effective. As a result, we have concluded the material weakness has been remediated as of December 31, 2020.

If we have inadequately remediated this material weakness, there will continue to be an increased risk that our future financial statements could contain errors that will be undetected. Further and continued determinations that there are material weaknesses in the effectiveness of our internal controls could reduce our ability to obtain financing or could increase the cost of any financing we obtain and require additional expenditures of resources to comply with applicable requirements. For more information relating to our internal controls and disclosure controls and procedures, and the remediation plan undertaken by us, see Item 9A, “Controls and Procedures” of the Annual Report.

We cannot assure you that material weaknesses or material deficiencies will not occur in the future and that we will be able to remediate such weaknesses or deficiencies in a timely manner, which could impair our ability to accurately and timely report our financial position, results of operations or cash flows. See the related risk factor included in this Annual Report on Form 10-K.We are in the process of designing and implementing measures to remediate the underlying causes of the control deficiencies that gave rise to the material weakness. In addition, we are providing in-house accounting personnel training to ensure that they have the relevant expertise related to the monitoring and oversight of expensing third party clinical trial costs. We will continue to monitor the effectiveness of these controls and will make any further changes management determines appropriate.

The Tax Cuts and Jobs Act, signed into law in 2017 could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law legislation, known as the Tax Cuts and Jobs Act of 2017, or Tax Act, that significantly revises the Code. The federal income tax law is referred to as the Tax Act, and contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%, limitation of the tax deduction for interest expense to 30% of adjusted earnings (except for certain small businesses), limitation of the deduction for NOLs to 80% of current year taxable income and elimination of NOL carrybacks, one time taxation of offshore earnings at reduced rates regardless of whether they are repatriated, elimination of U.S. tax on foreign earnings (subject to certain important exceptions), immediate deductions for certain new investments instead of deductions for depreciation expense over time, and modifying or repealing many business deductions and credits. The CARES Act, enacted in 2020, modified certain of these tax changes, and enacted other tax changes applicable to corporations. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the Tax Act and the CARES Act is uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain if and to what extent various states will conform to the Tax Act or the CARES Act. The impact of the Tax Act and the CARES Act on holders of our common stock is also uncertain and could be adverse. We urge our stockholders to consult with their legal and tax advisors with respect to this legislation and the potential tax consequences of investing in or holding our common stock.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate office is located at One First Avenue, Parris Building #34, Navy Yard Plaza, Boston, Massachusetts 02129. The Boston office is leased pursuant to a lease agreement that expires in August 2021. On December 21, 2015, we renewed a portion of the lease for Boston office through August 31, 2021.

In October 2019, we entered into an agreement with MD Anderson to lease laboratory and office space on MD Anderson's campus. The lease was subsequently amended and currently includes approximately 14,037 square feet of laboratory and office space on MD Anderson's campus. The laboratory supports our internal research and development activities. A portion of the space will be used for a pilot clinical production unit for GMP cell therapy manufacturing. The lease expires in February 2027. The monthly rent expense of these leases with MD Anderson is deducted from our prepayment at MD Anderson.

In December 2020, we entered into an agreement with MD Anderson to lease approximately 18,111 square feet of space on MD Anderson's campus that may be used GMP cell therapy manufacturing and research activities. The monthly rent expense of this lease with MD Anderson is deducted from our prepayment at MD Anderson. The lease expires in April 2028 and may be extended for five years at our election. See Note 8 to the accompanying financial statements for further details.

We believe that our existing facilities are adequate to meet our current needs.

Item 3. Legal Proceedings

In the ordinary course of business, we may periodically become subject to legal proceedings and claims arising in connection with ongoing business activities. The results of litigation and claims cannot be predicted with certainty, and unfavorable resolutions are possible and could materially affect our results of operations, cash flows or financial position. In addition, regardless of the outcome, litigation could have an adverse impact on us because of defense costs, diversion of management resources and other factors.

We do not have any pending litigation that, separately or in the aggregate, would, in the opinion of management, have a material adverse effect on our results of operations, financial condition or cash flows.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market for Common Stock

Our common stock trades on the Nasdaq Global Select Market under the symbol "ZIOP."

Record Holders

As of February 18, 2021, we had approximately 260 holders of record of our common stock, one of which was Cede & Co., a nominee for Depository Trust Company, or DTC. Shares of common stock that are held by financial institutions as nominees for beneficial owners or in "street name" are deposited into participant accounts at DTC and are considered to be held of record by Cede & Co. as one stockholder. As of February 18, 2021, we had approximately 29,049 beneficial holders of our common stock.

Dividends

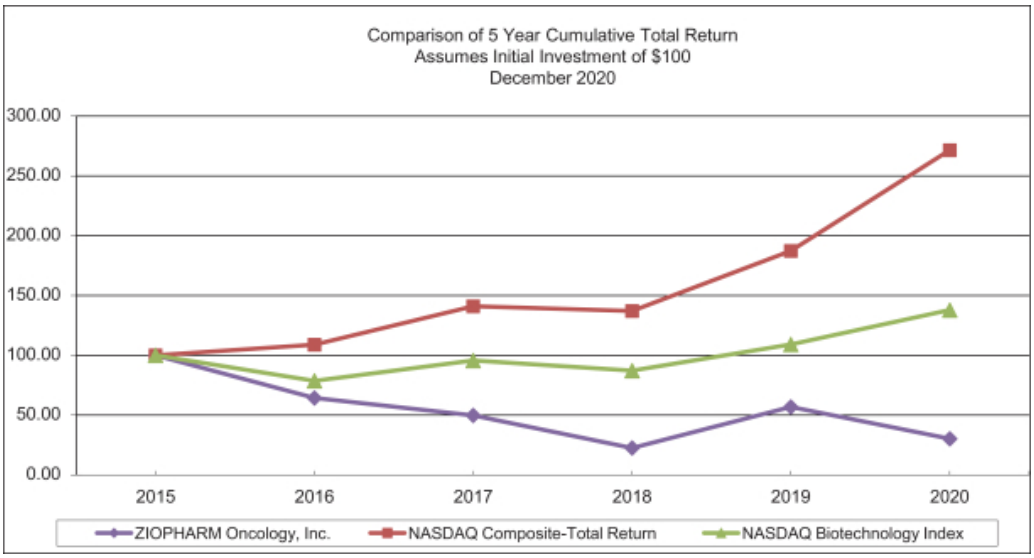
We have never declared or paid a cash dividend on our common stock and do not anticipate paying any cash dividends in the foreseeable future.

Stockholder Return Comparison

The following shall not be deemed incorporated by reference into any of our other filings under the Securities Exchange Act of 1934, as amended, or the Securities Act of 1933, as amended, except to the extent we specifically incorporate it by reference into such filings.

The graph below matches the cumulative 5-year total return of holders of our common stock with the cumulative total returns of the Nasdaq Composite index and the Nasdaq Biotechnology index. The graph assumes that the value of the investment in our common stock and in each of the indexes (including reinvestment of dividends) was $100 on December 31, 2015 and tracks it through December 31, 2020.

The comparisons in the graph below are based upon historical data and are not indicative of, nor intended to forecast, future performance of our common stock.



Item 6. Selected Financial Data

We have elected to comply with Item 301 of Regulation S-K, as amended February 10, 2021 and are omitting this disclosure in reliance thereon.

Item 7. Management Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our consolidated financial statements and related notes appearing elsewhere in this Annual Report on Form 10-K. In addition to historical financial information, the following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those contained in or implied by any forward-looking statements. Factors that could cause or contribute to these differences include those under "Risk Factors" included in Part I, Item 1A and under "Special Note Regarding Forward-Looking Statements" or in other parts of this Annual Report on Form 10-K.

Overview

We are a clinical-stage biopharmaceutical company focused on discovering, developing and commercializing next generation immunooncology platforms that leverage cell- and gene-based therapies to treat patients with cancer. We are developing platform technologies that utilize the immune system by employing innovative cell engineering and novel, controlled gene expression technologies designed to deliver safe and effective, cell and gene therapies for the treatment of multiple cancer types. Our major platform and priority is referred to as Sleeping Beauty and is based on the non-viral genetic engineering of immune cells using a transposon/transposase system that is intended to stably engineer T cells outside of the body for subsequent infusion. Our second platform is referred to as Controlled IL-12 and is designed to stimulate expression of interleukin 12, or IL-12, a master regulator of the immune system, in a controlled manner to focus the patient's immune system to more effectively attack cancer cells.

Using our Sleeping Beauty platform, we are developing T cell receptor, or TCR, T cell therapies to target neoantigens in solid tumors using two approaches, which we refer to as our "Library TCR-T Approach" and "our Personalized TCR-T Approach." The Library TCR-T Approach uses third party (allogeneic) TCRs that have

been prepared before the recipient has been identified to genetically modify patient-derived T cells to redirect specificity to public, or shared neoantigens. The Personalized TCR-T Approach uses patient-derived (autologous) TCRs that are prepared from the recipient to genetically modify patient-derived T cells to redirect specificity to private neoantigens. It is anticipated that more than one TCR-T product with more than one specificity will be administered in the Personalized TCR-T Approach. In February 2021, the U.S. Food and Drug Administration, or the FDA, cleared our company-sponsored investigational new drug, or IND, application submitted for a Phase 1/2 clinical trial evaluating TCRs from our library for the investigational treatment of lung, cholangiocarcinoma, pancreatic, colorectal and gynecological cancers. Initially, six curated TCRs reactive to mutated KRAS and TP53 will be included in the clinical trial: however, we expect to expand the number of TCRs to be evaluated in our clinical trial. This clinical trial is being conducted in collaboration with The University of Texas MD Anderson Cancer Center, or MD Anderson, which will be the first site for the clinical trial.

Under our Cooperative Research and Development Agreement, the National Cancer Institute, or NCI, is conducting a Phase 2 Personalized TCR-T clinical trial to evaluate autologous peripheral blood lymphocytes genetically modified with the Sleeping Beauty system to express private neoantigen-specific TCRs. The trial is designed to enroll patients with a broad range of solid tumors. The FDA has cleared the IND application submitted by the NCI for this clinical trial. However, enrollment in this clinical trial has been temporarily suspended due to issues internal to NCI and unrelated to our technology. The progress and timeline for this trial, including the timeline for dosing patients, are under the control of the NCI.

We are developing chimeric antigen receptor, or CAR, T cell, or CAR+ T, therapies targeting CD19 on malignant B cells using our Sleeping Beauty platform. We are advancing our so-called rapid personalized manufacture, or RPM, technology, in Greater China with Eden BioCell, Ltd., or Eden BioCell, our joint venture with TriArm Therapeutics, Ltd. RPM enables small numbers of T cells to be infused as soon as the day after gene transfer which is made possible by the genetic modification of resting T cells to express CAR and membrane bound IL-15, or mbIL15. Eden BioCell is leading the clinical development and commercialization of Sleeping Beauty-generated CD19-specific RPM CAR+T therapies using patient-derived (autologous) T cells in order to treat patients with relapsed or refractory CD19+ leukemias and lymphomas. In the fourth quarter of 2020, an IND was cleared by the Taiwan FDA for a Phase 1 clinical trial designed to evaluate safety and efficacy in this patient group. In our Phase 1 clinical trial being conducted in the United States, we plan to infuse donor-derived T cells after allogeneic bone marrow transplantation, or BMT, for recipients who have relapsed with CD19+ leukemias and lymphomas with our CD19- specific CAR+ T therapies manufactured using our technology.

Our Controlled IL-12 platform is based on an engineered replication-incompetent adenovirus, referred to as Ad-RTS-hIL-12, plus veledimex as a gene delivery system to conditionally produce IL-12, a potent, naturally occurring anti-cancer protein, to treat patients with solid tumors. Our Controlled IL-12 platform allows us to deliver IL-12 in a tunable dose as the cytokine is under transcriptional control of the RheoSwitch Therapeutic System® (RTS®). We have completed enrollment to all our Phase 1 and 2 clinical trials of patients with recurrent glioblastoma multiforme, or rGBM. These trials examine the effect of Controlled IL-12 as a monotherapy and in combination with blockade of the immune checkpoint protein PD-1. Dosing is ongoing in a Phase 2 clinical trial evaluating Ad-RTS-hIL-12 plus veledimex in combination with PD1 antibody Libtayo® (cemiplimab-rwlc) for the treatment of recurrent or progressive glioblastoma multiforme in adults. Data from our monotherapy and combination studies have been presented at major scientific conferences.

As of December 31, 2020, we have approximately $115.1 million of cash and cash equivalents. Given our current development plans, we anticipate our cash resources will be sufficient to fund our operations into the second quarter of 2022, and we have no committed sources of additional capital at this time. The forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses could vary materially and adversely as a result of a number of factors. We have based our estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate. Management does not know whether additional financing will be on terms favorable or

acceptable to us when needed, if at all. If adequate additional funds are not available when required, or if we are unsuccessful in entering into partnership agreements for further development of our product candidates, management may need to curtail its development efforts and planned operations.

Our amended and restated certificate of incorporation authorizes us to issue 250,000,000 shares of common stock. As of February 24, 2020, there were 214,667,023 shares of common stock outstanding and an additional 31,115,329 shares of common stock reserved for issuance pursuant to outstanding stock options and warrants. Though we have no immediate plans to issue additional shares of common stock, other than in connection with our 2020 Equity Incentive Plan, we may need additional shares for business and financial purposes in the future.

We have not generated significant revenue and have incurred significant net losses in each year since our inception. For the year ended December 31, 2020, we had a net loss of $80.0 million, and through December 31, 2020, we have incurred approximately $764.1 million of accumulated deficit since our inception in 2003. We expect to continue to incur significant operating expenditures and net losses. Further development of our product candidates will likely require substantial increases in our expenses as we:

- continue to undertake clinical trials for product candidates;
- seek regulatory approvals for product candidates;
- work with regulatory authorities to identify and address program-related inquiries;
- implement additional internal systems and infrastructure;
- hire additional personnel; and
- scale-up the formulation and manufacturing of our product candidates.

We continue to seek additional financial resources to fund the further development of our product candidates. If we are unable to obtain sufficient additional capital, one or more of these programs could be delayed, and we may be unable to continue our operations at planned levels and be forced to reduce our operations. Because of the numerous risks and uncertainties associated with product development, we are unable to predict the timing or amount of increased expenses or when or if we will be able to achieve or maintain profitability.

At-the-Market Offering Program

In June 2019, we entered into an Open Market Sale Agreement with Jefferies LLC, as agent, or Jefferies, pursuant to which we may offer and sell, from time to time through Jefferies, shares of our common stock having an aggregate offering price of up to $100.0 million. Shares will be sold pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283), as previously filed with the Securities and Exchange Commission. During the year ended December 31, 2020, we issued and sold an aggregate of 2,814,673 shares of our common stock under the sales agreement for aggregate net proceeds of $13.0 million after deducting commissions and offering expenses of $0.4 million and may sell and issue approximately $80.9 million in additional shares under the sales agreement.

Financial Overview

Collaboration Revenue

We recognize research and development funding revenue over the estimated period of performance. We have not generated product revenues since our inception. Unless and until we receive approval from the FDA and/or other regulatory authorities for our product candidates, we cannot sell our products and will not have product revenues.

Research and Development Expenses

Our research and development expense consists primarily of salaries and related expenses for personnel, costs of contract manufacturing services, costs of facilities and equipment, fees paid to professional service providers in

conjunction with our clinical trials, fees paid to contract research organizations in conjunction with preclinical animal studies, costs of materials used in research and development, consulting, license and milestone payments and sponsored research fees paid to third parties.

We have not accumulated and tracked our internal historical research and development costs or our personnel and personnel-related costs on a program-by-program basis. Our employee and infrastructure resources are allocated across several projects, and many of our costs are directed to broadly applicable research endeavors. As a result, we cannot state the costs incurred for each of our oncology programs on a program-by-program basis.

For the year ended December 31, 2020, our clinical stage projects included a Phase 1 clinical trial with Ad-RTS-IL-12 plus veledimex in progressive glioblastoma; a Phase 1 clinical trial infusing our 2nd generation CD19-specific CAR^+ T cells in patients with advanced lymphoid malignancies; and a Phase 1/2 clinical trial of Ad-RTS-hIL-12 with veledimex for the treatment of pediatric brain tumors. The expenses incurred by us to third parties for our Phase 1 clinical trial with Ad-RTS-IL-12 plus veledimex in progressive glioblastoma were $3.0 million for the year ended December 31, 2020 and $14.3 million from the project's inception in September 2015 through December 31, 2020. There were minimal expenses incurred by us to third parties for our Phase 1 clinical trial infusing our 2nd generation CD19-specific CAR^+ T cells in patients with advanced lymphoid malignancies for the year ended December 31, 2020 and $6.1 million from the project's inception in December 2015 through December 31, 2020. The expenses incurred by us to third parties for our Phase 1/2 clinical trial of Ad-RTS-hIL-12 with veledimex for the treatment of pediatric brain tumors were $0.2 million for the year ended December 31, 2020 and $2.2 million from the project's inception in October 2017 through December 31, 2020. The expense incurred by us to third parties for our Phase 2 clinical trial of Ad-RTS-hIL-12 with veledimex in combination with cemiplimab-rwlc in progressive glioblastoma were $4.2 million for the year ended December 31, 2020 and $5.8 million from the projects inception in June 2019 through December 31, 2020.

Our future research and development expenses in support of our current and future programs will be subject to numerous uncertainties in timing and cost to completion. We test potential products in numerous preclinical studies for safety, toxicology and efficacy. We may conduct multiple clinical trials for each product. As we obtain results from trials, we may elect to discontinue or delay clinical trials for certain products in order to focus our resources on more promising products or indications. Completion of clinical trials may take several years or more, and the length of time generally varies substantially according to the type, complexity, novelty and intended use of a product. It is not unusual for preclinical and clinical development of each of these types of products to require the expenditure of substantial resources.

We estimate that clinical trials of the type generally needed to secure new drug approval are typically completed over the following timelines:

Clinical Phase	Estimated Completion Period
Phase 1	1 - 2 years
Phase 2	2 - 3 years
Phase 3	2 - 4 years

The duration and the cost of clinical trials may vary significantly over the life of a project as a result of differences arising during clinical development, including, among others, the following:

- The number of clinical sites included in the trials;
- The length of time required to enroll suitable patients;
- The number of patients that ultimately participate in the trials;
- The duration of patient follow-up to ensure the absence of long-term product-related adverse events; and
- The efficacy and safety profile of the product.

As a result of the uncertainties discussed above, we are unable to determine the duration and completion costs of our programs or when and to what extent we will receive cash inflows from the commercialization and sale of a product. Our inability to complete our programs in a timely manner or our failure to enter into appropriate collaborative agreements could significantly increase our capital requirements and could adversely impact our liquidity. These uncertainties could force us to seek additional, external sources of financing from time-to-time in order to continue with our product development strategy. Our inability to raise additional capital, or to do so on terms reasonably acceptable to us, would jeopardize the future success of our business.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries, benefits and stock-based compensation, consulting and professional fees, including patent related costs, general corporate costs and facility costs not otherwise included in research and development expenses or cost of product revenue.

Other Income (Expense)

Other income (expense) consists primarily of interest income and changes in the fair value of our Series 1 preferred stock. All of the Series 1 preferred stock was forfeited on October 5, 2018 in conjunction with entering the License Agreement with PGEN Therapeutics, or PGEN, a wholly owned subsidiary of Precigen Inc., or Precigen, which was formerly known as Intrexon Corporation.

Results of Operations for the Fiscal Year ended December 31, 2020 and 2019

Collaboration Revenues

There was no revenue for the years end December 31, 2020 and 2019.

Research and Development Expenses

Research and development expenses during the years ended December 31, 2020 and 2019 were as follows:

	Year Ended December 31,			
	2020	2019	Change	
($ in thousands)				
Research and development	$ 52,696	$ 38,331	$14,365	37%

Research and development expenses for the year ended December 31, 2020 increased by $14.4 million when compared to the year ended December 31, 2019. The increase in expense during the year ended December 31, 2020 was due to an increase of $6.3 million in employee related expenses, driven primarily by increased headcount in 2020 compared to 2019, an increase of $6.1 million in gene therapy expenses driven by increased manufacturing and trial cost to support our ongoing clinical initiatives, $1.2 million of facility related services due to the buildout of the Houston facility on the MD Anderson campus, $1.2 million of cell therapy expenses driven by increased manufacturing to support our upcoming clinical initiatives, offset by a $0.4 million decrease in travel and contracted outside service.

General and Administrative Expenses

General and administrative expenses during the years ended December 31, 2020 and 2019 were as follows:

	Year ended December 31,			
	2020	2019	Change	
($ in thousands)				
General and administrative	$ 27,665	$ 19,527	$8,138	42%

General and administrative expenses for the year ended December 31, 2020 increased by $8.1 million as compared to the year ended December 31, 2019. The change was primarily due to increased contracted outside professional services of $5.6 million related to advisory services, an increase of $2.0 million in employee related expenses, driven primarily by increased headcount in 2020 compared to 2019, and increase of $0.9 million in facility related services, offset by a decrease of $0.4 million in travel related expenses.

Other Income (Expense)

Other income (expense) during the years ended December 31, 2020 and 2019 were as follows:

	Year ended December 31,			
	2020	2019	Change	
($ in thousands)				
Other income	$ 385	$ 813	$ (428)	-53%
Non-cash inducement warrant expense	—	(60,751)	60,751	-100%
Total	$ 385	$ (59,938)	$60,323	

During the year ended December 31, 2019, we recorded a non-cash inducement warrant expense of $60.8 million relating to the issuance of new warrants as an inducement for warrant holders to exercise their 2018 warrants early. There was no inducement warrant expense incurred for the year ended December 31, 2020. Additionally, we recorded $385 thousand in other income for the year ended December 31, 2020, compared to $813 thousand in other income for the year ended December 31, 2019, due to market fluctuations.

Results of Operations for the Fiscal Year ended December 31, 2019 and 2018

Collaboration Revenues

Revenues for the years ended December 31, 2019 and 2018 were as follows:

	Year ended December 31,			
	2019	2018	Change	
($ in thousands)				
Collaboration revenue	$ —	$ 146	$(146)	-100%

Revenue for the year ended December 31, 2019 decreased by $146 thousand in comparison to revenue for the year ended December 31, 2018. During the year ended December 31, 2019, there was no recognized revenue. During the year ended December 31, 2018, we recognized $146 thousand of revenue related to the Ares Trading Agreement under ASC 606 (Note 3).

Research and Development Expenses

Research and development expenses during the years ended December 31, 2019 and 2018 were as follows:

	Year ended December 31,			
	2019	2018	Change	
($ in thousands)				
Research and development	$ 38,331	$ 34,124	$4,207	12%

Research and development expenses for the year ended December 31, 2019 increased by $4.2 million when compared to the year ended December 31, 2018. The increase in expense during the year ended December 31, 2019 was due to an increase of $1.5 million in T cell therapy expenses, driven primarily by manufacturing costs and costs associated with our Patent License with the NCI, an increase of $1.2 million in employee related expenses, driven primarily by increased headcount in 2019 compared to 2018, $1.1 million of Gorilla IL-12 expenses driven by increased manufacturing and trial cost to support our ongoing clinical initiatives and $0.4 million of contracted outside services due to the buildout of the Houston facility at MD Anderson (Note 8).

General and Administrative Expenses

General and administrative expenses during the years ended December 31, 2019 and 2018 were as follows:

($ in thousands)	Year ended December 31, 2019	2018	Change	
General and administrative	$ 19,527	$ 19,918	$(391)	-2%

General and administrative expenses for the year ended December 31, 2019 decreased by $0.4 million as compared to the prior year. The change was primarily due to decreased stock compensation of $0.9 million and decreased contracted outside services and advisory fees related to our License Agreement with PGEN in 2018 (Note 7) of $0.9 million. The decreased costs in 2019 were offset by an increase of employee related costs of $0.8 million, an increase of facilities related costs of $0.4 million, and an increase of travel related costs due to international travel by executives of $0.2 million.

Other Income (Expense)

Other income (expense) during the years ended December 31, 2019 and 2018 were as follows:

($ in thousands)	Year ended December 31, 2019	2018	Change	
Other income (expense), net	$ 813	$ 631	$ 182	29%
Non-cash inducement warrant expense	(60,751)	—	(60,751)	100%
Change in fair value of derivative liabilities	—	158	(158)	-100%
Total	$ (59,938)	$ 789	$(60,727)	

During the year ended December 31, 2019, we recorded a non-cash inducement warrant expense of $60.8 million relating to the issuance of new warrants as an inducement for warrant holders to exercise their 2018 warrants early. During the year ended December 31, 2018 we recorded a gain on the change in fair value of the derivative liabilities of $158 thousand, which was derived from the number of previously outstanding shares of Series 1 preferred stock and their respective valuations. Additionally, we recorded $813 thousand in other income for the year ended December 31, 2019, compared to $631 thousand earned in the prior year, due to increases in our cash equivalent accounts.

Sources of Liquidity

To date, we have financed our operations primarily through public offerings of our common stock, private placements of our convertible equity securities and collaborations. Through December 31, 2020, we have received an aggregate of $[●] from public offerings and through our "at-the-market" offering program.

Liquidity and Capital Resources

As of December 31, 2020, we have approximately $115.1 million of cash and cash equivalents. Given our current development plans, in addition to our recent financing, we anticipate cash resources will be sufficient to fund our operations into the second quarter of 2022, and we have no committed sources of additional capital at this time. The forecast of cash resources is forward-looking information that involves risks and uncertainties, and the actual amount of our expenses could vary materially and adversely as a result of a number of factors. We have based our estimates on assumptions that may prove to be wrong, and our expenses could prove to be significantly higher than we currently anticipate. Management does not know whether additional financing will be on terms favorable or acceptable to us when needed, if at all. If adequate additional funds are not available when required, or if we are unsuccessful in entering into partnership agreements for further development of our products, management may need to curtail development efforts.

In addition to these factors, our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, competitive and technical advances, costs associated with the development of our product candidates, our ability to secure partnering arrangements, and the costs of filing, prosecuting, defending and enforcing our intellectual property rights. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

We expect that we will need additional financing to support our long-term plans for clinical trials and new product development. We expect to finance our cash needs through the sale of equity securities, strategic collaborations and/or debt financings, or through other sources that may be dilutive to existing stockholders. There can be no assurance that we will be able to obtain funding from any of these sources or, if obtained, what the terms of such funding(s) may be, or that any amount that we are able to obtain will be adequate to support our working capital requirements until we achieve profitable operations. We have no current committed sources of additional capital. Recently, capital markets have experienced a period of instability that may severely hinder our ability to raise capital within the time periods needed or on terms we consider acceptable, if at all. If we are unable to raise additional funds when needed, we may not be able to continue development and regulatory approval of our products, or we could be required to delay, scale back or eliminate some or all our research and development programs.

Our amended and restated certificate of incorporation authorizes us to issue 250,000,000 shares of common stock. As of February 24, 2020, there were 214,667,023 shares of common stock outstanding and an additional 31,115,329 shares of common stock reserved for issuance pursuant to outstanding stock options and warrants. Though we have no immediate plans to issue additional shares of common stock, other than in connection with our 2020 Equity Incentive Plan, we may need additional shares for business and financial purposes in the future.

Recent Financing Transactions

February 2020 Public Offering

On February 5, 2020, we entered into an underwriting agreement with Jefferies, as representative of the several underwriters named therein, relating to the issuance and sale of 27,826,086 shares of our common stock. The price to the public in the offering was $3.25 per share, and the underwriters agreed to purchase the shares from us pursuant to the underwriting agreement at a purchase price of $3.055 per share. Under the terms of the underwriting agreement, we also granted the underwriters an option, exercisable for 30 days, to purchase up to an additional 4,173,912 shares of common stock at a purchase price of $3.055 per share.

The offering, which closed on February 7, 2020, was made pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $84.8 million after deducting underwriting discounts and our offering expenses.

On March 10, 2020, the underwriters exercised their option to purchase an additional 1,284,025 shares. The net proceeds were approximately $3.9 million after deducting underwriting discounts and offering expenses paid by us.

At-the-Market Offering

During the year ended December 31, 2020, we sold an aggregate of 2,814,673 shares of our common stock. The offering was made pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $13.0 million after deducting underwriting discounts and our offering expenses.

During the year ended December 31, 2019, we sold an aggregate of 1,271,274 shares of our common stock. The offering was made pursuant to our effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $6.1 million after deducting underwriting discounts and our offering expenses.

July 2019 and September 2019 Warrant Exercise

On July 26, 2019 and September 12, 2019, we entered into agreements for the exercise of the warrants issued in November 2018 to purchase common stock in a private placement. Pursuant to the terms of the agreements, investors exercised warrants for an aggregate of 17,803,031 shares of common stock, at an exercise price of $3.01 per share. We issued new warrants to purchase up to 17,803,031 additional shares of common stock as an inducement for warrant holders to exercise their 2018 warrants early. The new warrants will become exercisable six months following the date of issuance, will expire on the fifth anniversary of the initial exercise date, and have an exercise price of $7.00 (Note 10). Proceeds from the exercise of the warrants, before deducting placement agent fees and other related expenses of $1.1 million were approximately $52.5 million. For the year ended December 31, 2019, we also recorded $60.8 million in non-cash inducement warrant expense, which is included in our statement of operations.

November 2018 Private Placement

On November 11, 2018, we entered into a securities purchase agreement with certain institutional and accredited investors pursuant to which we agreed to issue and sell to the investors an aggregate of 18,939,394 immediately separable units at a price per unit of $2.64, for net proceeds of approximately $47.1 million. Each unit was comprised of (i) one share of our common stock, par value $0.001 per share and (ii) a warrant to purchase one share of common stock. The securities issued by us pursuant to the securities purchase agreement and to be issued upon exercise of the warrants were not registered under the Securities Act and may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements. When issuing the units, we relied on the private placement exemption from registration provided by Section 4(a)(2) of the Securities Act and by Rule 506 of Registration D, promulgated thereunder and on similar exemptions under applicable state laws and filed a Form D with the SEC on November 19, 2018. On February 7, 2019, we filed a registration statement on Form S-3 registering the resale of shares issued pursuant to the securities purchase agreement and the resale of shares that may be issued upon exercise of the warrants.

The following table summarizes our net increase (decrease) in cash and cash equivalents for the years ended December 31, 2020, 2019, and 2018:

	Year ended December 31,		
($ in thousands)	**2020**	**2019**	**2018**
Net cash provided by (used in):			
Operating activities	$ (57,013)	$ (40,854)	$ (49,457)
Investing activities	(9,778)	(284)	(459)
Financing activities	102,119	59,150	40,311
Net increase (decrease) in cash and cash equivalents	$ 35,328	$ 18,012	$ (9,605)

Cash flows from operating activities represent the cash receipts and disbursements related to all of our activities other than investing and financing activities. Operating cash flow is derived by adjusting our net loss for:

- Non-cash operating items such as depreciation and amortization, stock-based compensation, inducement warrant expense and preferred stock and warrants for common stock issued in connection with license agreements;

- Changes in operating assets and liabilities which reflect timing differences between the receipt and payment of cash associated with transactions and when they are recognized in results of operations; and
- Changes associated with the fair value of our derivative liabilities.

Net cash used in operating activities for the year ended December 31, 2020 was $57.0 million, as compared to net cash used in operating activities of $40.9 million and $49.5 million for the years ended December 31, 2019 and 2018, respectively. The net cash used in operating activities for the year ended December 31, 2020 was primarily a result of our net loss of $80.0 million, an increase in receivables of $1.3 million, an increase in other noncurrent assets of $0.6 million, offset by an decrease in prepaid expenses and other current assets of $11.6 million primarily related to the use of funds at MD Anderson and an increase in accounts payable and accrued expenses of $5.3 million. The net cash used in operating activities for the year ended December 31, 2019 was primarily a result of our net loss of $117.8 million, an increase in receivables of $1.5 million, an increase in prepaid expenses and other current assets of $1.7 million, offset by a decrease in other noncurrent assets of $9.4 million, and an increase in accounts payable and accrued expenses of $1.9 million. Net cash used in operating activities for the year ended December 31, 2018 was primarily a result of our net loss of $53.1 million, an increase in receivables of $1.9 million, an increase of prepaid expenses and other current assets of $1.3 million, and a decrease in accounts payable and accrued expenses of $4.8 million, offset by a decrease of other noncurrent assets of $4.0 million.

Net cash used in investing activities was $9.8 million for the year ended December 31, 2020 compared to $284 thousand and $459 thousand for the years ended December 31, 2019 and December 31, 2018, respectively. The change was due primarily to increases in equipment purchases and leasehold improvements under our agreement with MD Anderson to build out space in Houston, Texas during the year ended December 31, 2020.

Net cash provided by financing activities was $102.1 million for the year ended December 31, 2020 compared to net cash provided by financing activities of $59.2 million and $40.3 million provided by financing activities for the years ended December 31, 2019 and 2018, respectively. The $102.1 million provided by financing activities during the year ended December 31, 2020, is a result of net proceeds of $88.7 million from the issuance of common stock in our follow-on public offering, net and $13.0 million from the issuance of common stock pursuant to our ATM facility. The $59.2 million provided by financing activities during the year ended December 31, 2019 is a result of net proceeds from the issuance of common stock upon exercise of warrants of $52.5 million, net proceeds from the issuance in connection with an at the market offering of $6.1 million, proceeds from the exercise of stock options of $1.2 million, offset by $0.7 million used to repurchase common stock. The $40.3 million provided by financing activities during the year ended December 31, 2018 is a result of net proceeds of $47.1 million from our November 2018 financing which were offset by cash paid of $5.4 million from our License Agreement and $1.6 million paid for the repurchase of common stock.

Operating Capital and Capital Expenditure Requirements

We anticipate that losses will continue for the foreseeable future. At December 31, 2020, our accumulated deficit was approximately $764.1 million. Our actual cash requirements may vary materially from those planned because of a number of factors including:

- changes in the focus, direction and pace of our development programs;
- competitive and technical advances;
- costs associated with the development of our product candidates;
- our ability to secure partnering arrangements;
- costs of filing, prosecuting, defending and enforcing any patent claims and any other intellectual property rights, or other developments; and
- other matters identified under Part I – Item 1A. “Risk Factors.”

Working capital as of December 31, 2020 was $112.2 million, consisting of $130.6 million in current assets and $18.4 million in current liabilities. Working capital as of December 31, 2019 was $93.0 million, consisting of $105.5 million in current assets and $12.5 million in current liabilities.

Contractual Obligations

The following table summarizes our outstanding obligations as of December 31, 2020 and the effect those obligations are expected to have on our liquidity and cash flows in future periods:

($ in thousands)	Total	Less than 1 year	2 - 3 years	4 - 5 years	More than 5 years
Operating leases	$ 6,171	$ 1,189	$ 1,620	$ 1,714	$ 1,648
CRADA	2,500	2,500	—	—	—
Royalty and license fees	3,050	100	700	700	1,550
Strategic advisory services	1,125	1,125			
Total	$12,846	$ 4,914	$ 2,320	$ 2,414	$ 3,198

Our commitments for operating leases relate to the lease for our corporate headquarters in Boston, Massachusetts, and laboratory and office space in Houston, Texas. On December 21, 2015 and April 15, 2016, we renewed the sublease for our corporate headquarters in Boston, MA through August 31, 2021. On January 30, 2018, we entered into a lease agreement for office space in Houston, TX at MD Anderson through April 2021. On March 12, 2019, we entered into a lease agreement for additional office Space in Houston through April 2021. On October 15, 2019, we entered into another lease agreement for additional office space in Houston through February 2027. On April 13, 2020, we entered into another lease agreement for additional office and laboratory space in Houston through February 2027. On June 1, 2020, we entered into a short-term lease in Houston for office and laboratory space. On September 1, 2020, we entered an additional short-term lease in Houston for additional office and laboratory space. On December 15, 2020, we entered into another lease for additional office and laboratory space in Houston through April 2028.

On January 10, 2017, we announced the signing of a CRADA with the NCI for the development of ACT-based immunotherapies genetically modified using the *Sleeping Beauty* transposon/transposase system for the treatment of solid tumors. In February 2019, we extended the CRADA with the NCI until January 9, 2022.

On May 28, 2019, we entered into a patent license agreement, or the Patent License, with the NCI. The terms of the Patent License require us to pay the NCI minimum annual royalties in the amount of $0.3 million, which amount will be reduced to $0.1 million once the aggregate minimum annual royalties paid by us equals $1.5 million.

On October 5, 2018, we entered into the License Agreement with Precigen. Under the License Agreement, we are obligated to pay PGEN an annual licensing fee of $100 thousand expected to be paid through the term of the agreement.

On November 27, 2020, we entered into two agreements for strategic advisory services that require us to pay $1.1 million through September 30, 2021.

Critical Accounting Policies and Significant Estimates

Our Management's Discussion and Analysis of our financial condition and results of operations is based upon our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at

the date of the financial statements as well as the reported expenses during the reporting periods. We evaluate our estimates and judgments on an ongoing basis. Actual results may differ materially from these estimates under different assumptions or conditions.

We believe the following are our more significant estimates and judgments used in the preparation of our financial statements:

- Research and Development Costs / Clinical trial expenses;
- Revenue recognition from collaboration agreements;
- Fair value measurements of stock-based compensation;
- Income taxes.

Research and Development Costs / Clinical Trial Expenses

As part of the process of preparing our financial statements, we are required to estimate our accrued research and development 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 costs incurred for the services when we have not yet been invoiced or otherwise notified of the actual costs. The majority of our service providers invoice us in arrears for services performed, on a predetermined schedule or when contractual milestones are met; however, a few require advanced payments. 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. Examples of estimated accrued research and development expenses include fees paid to:

- CROs in connection with performing research services on our behalf and clinical trials,
- investigative sites or other providers in connection with clinical trials,
- vendors in connection with preclinical and clinical development activities, and
- vendors related to product manufacturing, development, and distribution of preclinical and clinical supplies.

We base our expenses related to preclinical studies and clinical trials on our estimates of the services received and efforts expended pursuant to quotes and contracts with multiple CROs that conduct and manage clinical trials on our behalf. The financial terms of these agreements are 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 vendors will exceed the level of services provided and result in a prepayment of the clinical expense. Payments under some of these contracts depend on factors such as the completion of clinical trial milestones. In accruing service fees, we estimate the time period over which services will be performed, enrollment of patients, number of sites activated 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 amount of prepaid expense accordingly. Although we do not expect our estimates to be materially different from amounts actually incurred, our understanding of the status and timing of services performed relative to the actual status and timing of services performed may vary and may result in us reporting amounts that are too high or too low in any particular period. To date, we have not made any material adjustments to our prior estimates of accrued research and development expenses.

Revenue Recognition from Collaboration Agreements

We primarily generate revenue through collaboration arrangements with strategic partners for the development and commercialization of product candidates. Commencing January 1, 2018, we recognized revenue in accordance with ASC 606 which replaced ASC 605, *Multiple Element Arrangements*, as used in historical years. The core principle of ASC 606 is that an entity should recognize revenue to depict the transfer of promised goods and/or services to customers in an amount that reflects the consideration to which the entity expects to be entitled

in exchange for those goods and/or services. To determine the appropriate amount of revenue to be recognized for arrangements that we determine are within the scope of ASC 606, we perform the following steps: (i) identify the contract(s) with the customer, (ii) identify the performance obligations in the contract, (iii) determine the transaction price, (iv) allocate the transaction price to the performance obligations in the contract and (v) recognize revenue when (or as) each performance obligation is satisfied.

We recognize collaboration revenue under certain of our license or collaboration agreements that are within the scope of ASC 606. Our contracts with customers typically include promises related to licenses to intellectual property, research and development services and options to purchase additional goods and/or services. If the license to our intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, we recognize revenue from non-refundable, up-front fees allocated to the license when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For licenses that are bundled with other promises, we utilize judgment to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front fees. Contracts that include an option to acquire additional goods and/or services are evaluated to determine if such option provides a material right to the customer that it would not have received without entering into the contract. If so, the option is accounted for as a separate performance obligation. If not, the option is considered a marketing offer which would be accounted for as a separate contract upon the customer's election.

The terms of our arrangements with customers typically include the payment of one or more of the following: (i) non-refundable, up-front payment, (ii) development, regulatory and commercial milestone payments, (iii) future options and (iv) royalties on net sales of licensed products. Accordingly, the transaction price is generally comprised of a fixed fee due at contract inception and variable consideration in the form of milestone payments due upon the achievement of specified events and tiered royalties earned when customers recognize net sales of licensed products. We measure the transaction price based on the amount of consideration to which it expects to be entitled in exchange for transferring the promised goods and/or services to the customer. We utilize the most likely amount method to estimate the amount of variable consideration, to predict the amount of consideration to which we will be entitled for our one open contract. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. At the inception of each arrangement that includes development and regulatory milestone payments, we evaluate whether the associated event is considered probable of achievement and estimates the amount to be included in the transaction price using the most likely amount method. Milestone payments that are not within the control of us or the licensee, such as those dependent upon receipt of regulatory approval, are not considered to be probable of achievement until the triggering event occurs. At the end of each reporting period, we reevaluate the probability of achievement of each milestone and any related constraint, and if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment. For arrangements that include sales-based royalties, including milestone payments based upon the achievement of a certain level of product sales, we recognize revenue upon the later of: (i) when the related sales occur or (ii) when the performance obligation to which some or all of the payment has been allocated has been satisfied (or partially satisfied). To date, we have not recognized any development, regulatory or commercial milestones or royalty revenue resulting from any of our collaboration arrangements. Consideration that would be received for optional goods and/or services is excluded from the transaction price at contract inception.

We allocate the transaction price to each performance obligation identified in the contract on a relative standalone selling price basis. However, certain components of variable consideration are allocated specifically to one or more particular performance obligations in a contact to the extent both of the following criteria are met: (i) the terms of the payment relate specifically to the efforts to satisfy the performance obligation or transfer the distinct good or service and (ii) allocating the variable amount of consideration entirely to the performance

obligation or the distinct good or service is consistent with the allocation objective of the standard whereby the amount allocated depicts the amount of consideration to which the entity expects to be entitled in exchange for transferring the promised goods or services. We develop assumptions that require judgment to determine the standalone selling price for each performance obligation identified in each contract. The key assumptions utilized in determining the standalone selling price for each performance obligation may include forecasted revenues, development timelines, estimated research and development costs, discount rates, likelihood of exercise and probabilities of technical and regulatory success.

Revenue is recognized based on the amount of the transaction price that is allocated to each respective performance obligation when or as the performance obligation is satisfied by transferring a promised good and/or service to the customer. For performance obligations that are satisfied over time, we recognize revenue by measuring the progress toward complete satisfaction of the performance obligation using a single method of measuring progress which depicts the performance in transferring control of the associated goods and/or services to the customer. We use input methods to measure the progress toward the complete satisfaction of performance obligations satisfied over time. We evaluate the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment.

Fair Value Measurements of Stock Based Compensation and Series 1 Preferred Stock (including related dividends)

Accounting standards define fair value, establish a framework for measuring fair value under generally accepted accounting principles and enhance disclosures about fair value measurements. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The standard describes a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value which are the following:

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

We make certain assumptions to value and expense our share-based compensation awards, as well as our Series 1 preferred stock (including related dividends), which as of October 2018 is no longer outstanding. In connection with valuing stock options we use the Black-Scholes valuation model, which requires us to estimate certain subjective assumptions. The key assumptions we make are: the expected volatility of our stock and the expected term of the award.

We review our valuation assumptions periodically and, as a result, we may change our valuation assumptions used to value share-based awards granted in future periods. Such changes may lead to a significant change in the expense we recognize in connection with share-based payments.

Income Taxes

In preparing our financial statements, we estimate our income tax liability in each of the jurisdictions in which we operate by estimating our actual current tax expense together with assessing temporary differences resulting

from differing treatment of items for tax and financial reporting purposes. These differences result in deferred tax assets and liabilities, which, prior to the consideration for the need for a valuation allowance, are included on the balance sheet. Significant management judgment is required in assessing the realizability of our deferred tax assets. In performing this assessment, we consider whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. In making this determination, under the applicable financial accounting standards, we are allowed to consider the scheduled reversal of deferred tax liabilities, projected future taxable income, and the effects of tax planning strategies. Our estimates of future taxable income include, among other items, our estimates of future income tax deductions related to the exercise of stock options. In the event that actual results differ from our estimates, we adjust our estimates in future periods and we may need to establish a valuation allowance, which could materially impact our financial position and results of operations.

We account for uncertain tax positions using a “more-likely-than-not” threshold for recognizing and resolving uncertain tax positions. The evaluation of uncertain tax positions is based on factors that include, but are not limited to, changes in tax law, the measurement of tax positions taken or expected to be taken in tax returns, the effective settlement of matters subject to audit, new audit activity and changes in facts or circumstances related to a tax position. We evaluate uncertain tax positions on an annual basis and adjust the level of the liability to reflect any subsequent changes in the relevant facts surrounding the uncertain positions. Our liabilities for uncertain tax positions can be relieved only if the contingency becomes legally extinguished through either payment to the taxing authority or the expiration of the statute of limitations, the recognition of the benefits associated with the position meet the “more-likely-than-not” threshold or the liability becomes effectively settled through the examination process. We consider matters to be effectively settled once the taxing authority has completed all of its required or expected examination procedures, including all appeals and administrative reviews; we have no plans to appeal or litigate any aspect of the tax position; and we believe that it is highly unlikely that the taxing authority would examine or re-examine the related tax position. We also accrue for potential interest and penalties, related to unrecognized tax benefits in income tax expense.

Recent Accounting Pronouncements

For a discussion of new accounting standards, please read Note 3 to the accompanying financial statements, *Summary of Significant Accounting Principles* included in this report.

Off-Balance Sheet Arrangements

We have not entered into, nor do we currently have any special purpose entities or off-balance sheet financing arrangements as defined under SEC rules.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Our exposure to market risk is limited to our cash. The goals of our investment policy is the preservation of capital, fulfillment of liquidity needs, fiduciary control of cash and investments. We also seek to maximize income from our investments without assuming significant risk and consistent with regulatory limitations. To achieve our goals, we maintain our cash in interest-bearing cash accounts. As all of our investments are cash deposits in a global bank, which is subject to minimal interest rate risk.

Effect of Currency Exchange Rates and Exchange Rate Risk Management

We conduct a small number of clinical trials outside of the United States, primarily in Western Europe. These business operations are not material at this time, and therefore we do not anticipate that currency fluctuations will have a material impact on our financial position, results of operations or cash flows at this time.

Item 8. Financial Statements and Supplementary Data

The information required by this Item 8 is contained on pages F-1 through F-40 of this Annual Report and is incorporated herein by reference.

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

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures.

Under the supervision and with the participation of our management, including our interim Chief Executive Officer and interim Chief Financial Officer, we have evaluated the effectiveness of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) or 15d-15(e) promulgated under the Exchange Act, as of December 31, 2020. Based on that evaluation, our interim Chief Executive Officer and our interim Chief Financial Officer have concluded that as of December 31, 2020, our disclosure controls and procedures were effective as described below under "Management's Report on Internal Control over Financial Reporting."

Remediation of Material Weakness

In connection with our audit of the fiscal year 2019 consolidated financial statements, we and our independent registered public accounting firm determined that we had material weaknesses in our internal control over financial reporting. We did not design and maintain effective controls relating to the monitoring and oversight of expensing third party clinical trial costs. Specifically, our internal controls were not designed effectively to provide reasonable assurance regarding the accurate and timely evaluation of the amount of third-party costs to record. There were no changes to any of our previously released financial statements. Based on this material weakness, our management concluded that at December 31, 2019, our internal control over financial reporting was not effective.

During the year ended December 31, 2020, we implemented enhanced procedures to remediate the deficiencies in our internal control over financial reporting including implementation of additional in-house meetings across departments to ensure that they have the relevant expertise related to the monitoring and oversight of expensing third party clinical trial costs.

We have completed execution of our remediation plan and successfully remediated the material weakness in internal control over financial reporting described above as of December 31, 2020.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13(a)-15(f) and 15(d)-15(f) promulgated under the Exchange Act as a process designed by, or under the supervision of, our interim principal executive and interim principal financial officers and effected by our board of directors, management and other personnel, 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 and includes those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and

- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Under the supervision and with the participation of management, including our interim principal executive and interim financial officers, we assessed our internal control over financial reporting as of December 31, 2020, based on criteria for effective internal control over financial reporting established in Internal Control — Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Our management's assessment of the effectiveness of our internal control over financial reporting included testing and evaluating the design and operating effectiveness of our internal controls. In management's opinion, we have maintained effective internal control over financial reporting as of December 31, 2020, based on the criteria discussed above.

The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by RSM US LLP, an independent registered public accounting firm, as stated in their report which is included herein.

Inherent Limitations on Internal Controls

Our management, including our interim Chief Executive Officer and our interim Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal controls will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within our company have been detected. These inherent limitations include the realities that judgements in decision-making can be faulty, and that breakdowns can occur because of a simple error or mistake. Additionally, controls can be circumvented by individual acts of some persons, by collusion of two or more people, or by management override of the control. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions, or the degree of compliance with the policies or procedures may deteriorate. 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. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Changes in Internal Controls over Financial Reporting

Except for the remediation measures discussed above, there were no other changes in our internal control over financial reporting (as defined in Rule 13(a)-15(f) of the Exchange Act) that occurred during the fiscal quarter ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

Date of 2021 Annual Meeting

We intend to hold our annual meeting of stockholders on Wednesday, May 19, 2021 (the "2021 Annual Meeting"). Because the expected date of the 2021 Annual Meeting represents a change of more than 30 calendar days from the date of the anniversary of our 2020 annual meeting of stockholders, we are providing revised deadlines for receipt of stockholder proposals and nominations with respect to the 2021 Annual Meeting.

Pursuant to Rule 14a-8 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), stockholders may present proposals for inclusion in our proxy statement for the 2021 annual meeting of

stockholders ("2021 Annual Meeting") by submitting their proposals to us a reasonable time before we begin to print and send our proxy materials. We will consider any such proposal must be provided not later than the close of business on or prior to Monday, March 8, 2021 to be timely, which is a reasonable time before we begin to distribute the proxy materials for the 2021 Annual Meeting. Any such proposals must comply with the applicable requirements of Rule 14a-8 of the Exchange Act regarding the inclusion of stockholder proposals in company-sponsored proxy materials and other applicable laws and must be received in writing by us at the following address: Ziopharm Oncology, Inc., One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129, Attention: Corporate Secretary. Due to the complexity of the respective rights of the stockholders and us in this area, any stockholder desiring to propose such an action is advised to consult with his or her legal counsel with respect to such rights. We suggest that any such proposal be submitted to us by certified mail, return receipt requested.

Rule 14a-4 under the Exchange Act governs our use of our discretionary proxy voting authority with respect to a stockholder proposal that the stockholder has not sought to include in our proxy statement. Rule 14a-4 provides that if a proponent of a proposal fails to notify us at least 45 days prior to the month and day of mailing of the prior year's proxy statement, management proxyholders will be allowed to use their discretionary voting authority as to whether the proposal is raised at the annual meeting, without any discussion of the matter. If a stockholder wishes to bring a matter before the stockholders at the 2021 Annual Meeting but does not notify us before Monday, March 15, 2021, which is a reasonable time before we begin to distribute the proxy materials for the 2021 Annual Meeting, for all proxies we receive, the management proxyholders will have discretionary authority to vote on the matter, including discretionary authority to vote in opposition to the stockholder's proposal. Any such notices should be received in writing at the following address: Ziopharm Oncology, Inc., One First Avenue, Parris Building 34, Navy Yard Plaza, Third Floor, Boston, Massachusetts 02129, Attention: Corporate Secretary.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information in response to this Item is incorporated herein by reference to the information from our definitive proxy statement to be filed pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this Annual Report under the sections titled *Proposal No. 1—Election of Directors, Current Directors, Director Nominees and Executive Officers, Information Regarding the Board of Directors and Corporate Governance, Beneficial Ownership and Delinquent Section 16(a) Reports.*

Item 11. Executive Compensation

Information in response to this Item is incorporated herein by reference to the information from our definitive proxy statement to be filed pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this Annual Report under the section titled *Executive Compensation.*

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

Securities Authorized for Issuance under Equity Compensation Plans

Our 2012 Equity Incentive Plan, or the 2012 Plan and our 2020 Equity Incentive Plan, or the 2020 Plan, are our only equity compensation plans approved by our stockholders. The following table sets forth certain information as of December 31, 2020 with respect to the 2012 Plan and 2020 Plan:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options (A)	Weighted-Average Exercise Price of Outstanding Options (B)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (A)) (C)
Equity compensation plans approved by stockholders:			
2012 Stock Option Plan	5,659,018	$ 4.01	—
2020 Equity Incentive Plan	1,173,368	2.83	5,714,648
Total:	6,832,386	$ 3.93	5,714,648
Equity compensation plans not approved by stockholders:			
Inducement Awards	588,333	5.78	—
Total:	588,333	$ 5.78	—

Additional information in response to this Item is incorporated herein by reference to the information from our definitive proxy statement to be filed pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this Annual Report under the section titled *Beneficial Ownership*.

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

Information in response to this Item is incorporated herein by reference to the information from our definitive proxy statement to be filed pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this Annual Report under the sections titled *Certain Relationships and Related Transactions and Information Regarding the Board of Directors and Corporate Governance*.

Item 14. Principal Accountant Fees and Services

Information in response to this Item is incorporated herein by reference to the information from our definitive proxy statement to be filed pursuant to Regulation 14A within 120 days after the end of the fiscal year covered by this Annual Report under the section titled *Independent Registered Public Accounting Firm Fees and Other Matters*.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(1) Financial Statements:

The Financial Statements required to be filed by Item 8 of this Annual Report, and filed in this Item 15, are as follows:

(2) Financial Statement Schedules:

Schedules are omitted because they are not applicable, or are not required, or because the information is included in the financial statements and notes thereto.

(3) Exhibits:

Exhibit No.	Description of Document
2.1	Agreement and Plan of Merger among the Registrant (formerly "EasyWeb, Inc."), ZIO Acquisition Corp. and ZIOPHARM, Inc., dated August 3, 2005 (incorporated by reference to Exhibit 10.1 to the Registrant's Form 8-K, SEC File No. 000-32353, filed August 9, 2005).
3.1	Amended and Restated Certificate of Incorporation, as filed with the Delaware Secretary of State on April 26, 2006 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, SEC File No. 000-32353, filed April 26, 2006).
3.2	Certificate of Merger dated September 13, 2005, relating to the merger of ZIO Acquisition Corp. with and into ZIOPHARM, Inc. (incorporated by reference to Exhibit 3.1 to the Registrant's Form 8-K, SEC File No. 000-32353, filed September 19, 2005).
3.3	Certificate of Ownership of the Registrant (formerly "EasyWeb, Inc.") dated as of September 14, 2005, relating the merger of ZIOPHARM, Inc. with and into the Registrant, and changing the Registrant's corporate name from EasyWeb, Inc. to ZIOPHARM Oncology, Inc. (incorporated by reference to Exhibit 3.2 to the Registrant's Form 8-K, SEC File No. 000-32353, filed September 19, 2005).
3.4	Amended and Restated Certificate of Designation, Preferences and Rights of Series 1 Preferred Stock, as filed with the Delaware Secretary of State on July 1, 2016 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K/A, SEC File No. 001-33038, filed July 1, 2016).
3.5	Amended and Restated Bylaws of the Registrant, dated as of September 21, 2020 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed September 22, 2020).
4.1	Specimen common stock certificate (incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form SB-2, SEC File No. 333-129020, filed October 14, 2005).

Exhibit No.	Description of Document
4.2	Form of Option for the Purchase of Shares of common stock dated August 30, 2004 and issued to The University of Texas M. D. Anderson Cancer Center (incorporated by reference to Exhibit 4.6 to the Registrant's Annual Report on Form 10-KSB, SEC File No. 000-32353, filed March 20, 2006).
4.3	Schedule identifying Material Terms of Options for the Purchase of Shares of Common Stock (incorporated by reference to Exhibit 4.7 to the Registrant's Annual Report on Form 10-KSB, SEC File No. 000-32353, filed March 20, 2006).
4.4	Form of Warrant to Purchase Common Stock (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038 filed November 13, 2018).
4.5#	Warrant to Purchase Common Stock issued to The University of Texas M. D. Anderson Cancer Center (incorporated by reference to Exhibit 4.7 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 2, 2020).
4.6	Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act Of 1934, as amended (incorporated by reference to Exhibit 4.8 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 2, 2020).
10.1+	ZIOPHARM Oncology, Inc. Amended and Restated 2003 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Annual Report on Form 10-K SEC File No. 001-33038 filed March 1, 2011).
10.2+	Form of Incentive Stock Option Agreement granted under the Registrant's 2003 Stock Option Plan (incorporated by reference to Exhibit 10.8 to the Registrant's Annual Report on Form 10-KSB, SEC File No. 000-32353, filed March 20, 2006).
10.3+	ZIOPHARM Oncology, Inc. 2012 Equity Incentive Plan, as amended (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038 filed September 24, 2018).
10.4+	Form of Restricted Stock Agreement Granted Under the ZIOPHARM Oncology, Inc. 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038 filed June 26, 2012).
10.5+	Form of Option Agreement Granted Under the ZIOPHARM Oncology, Inc. 2012 Equity Incentive Plan (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038 filed June 26, 2012).
10.6+	Inducement Award Agreement between the Registrant and Satyavrat Shukla, dated July 23, 2019 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed July 22, 2019).
10.7+	Form of Inducement Award Grant Notice and Inducement Award Grant Agreement (incorporated by reference to Exhibit 99.3 to the Registrant's Registration Statement on Form S-8, SEC File No. 333-238090, filed May 8, 2020).
10.8+	ZIOPHARM Oncology, Inc. 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038 filed July 1, 2020).
10.9+*	Form of Restricted Stock Agreement Granted Under the ZIOPHARM Oncology, Inc. 2020 Equity Incentive Plan.
10.10+*	Form of Stock Option Agreement Granted Under the ZIOPHARM Oncology, Inc. 2020 Equity Incentive Plan.
10.11+	Form of Indemnity Agreement for directors and executive officers (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed January 31, 2013).

Exhibit No.	Description of Document
10.12+	Employment Agreement by and between the Registrant and Laurence James Neil Cooper, M.D., Ph.D. dated as of May 5, 2015 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed May 7, 2015).
10.13+	Employment Agreement, dated as of April 23, 2019, by and between the Registrant and David Mauney, M.D. (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed April 29, 2019).
10.14+	Consulting Agreement by and between the Registrant and Dr. David Mauney, dated May 26, 2020 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed May 29, 2020).
10.15+	Separation Agreement and Release by and between the Registrant and Dr. David Mauney, effective May 26, 2020 (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed May 29, 2020).
10.16+	Employment Agreement, dated as of April 23, 2019, by and between the Registrant and Robert Hadfield (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed April 29, 2019).
10.17+*	Amendment to the Employment Agreement by and between the Registrant and Robert Hadfield, dated as of November 23, 2020.
10.18+	Employment Agreement, dated as of June 4, 2019, by and between the Registrant and Sath Shukla (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed July 24, 2019).
10.19+*	Amendment to the Employment Agreement by and between the Registrant and Sath Shukla, dated as of November 23, 2020.
10.20#*	Form of Retention Bonus Agreement.
10.21+	Consulting Agreement by and between Ziopharm Oncology Inc. and Danforth Advisors LLC, effective as of January 21, 2021 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed February 23, 2021).
10.22	License Agreement by and among the Registrant, Intrexon Corporation and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center dated as of January 13, 2015 (incorporated by reference to Exhibit 10.5 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed January 28, 2015).
10.23†	Exclusive License Agreement by and between the Registrant, Precigen, Inc. and Intrexon Corporation, dated October 5, 2018 (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 001-33038, filed November 9, 2018).
10.24#	Amendment No. 1 to the Exclusive License Agreement by and between the Registrant and PGEN Therapeutics, Inc. (formerly known as Precigen, Inc.), dated October 15, 2020 (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q SEC File No. 001-33038, filed November 5, 2020).
10.25†	License and Collaboration Agreement by and among the Registrant, Intrexon Corporation and Ares Trading S.A. dated as of March 27, 2015 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed April 2, 2015).
10.26	Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of August 17, 2015 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed August 21, 2015).

Exhibit No.	Description of Document
10.27	Amendment #1 to the Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of August 30, 2016 (incorporated by reference to Exhibit 10.21 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 5, 2019).
10.28	Amendment #2 to the Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of January 17, 2017 (incorporated by reference to Exhibit 10.21 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 5, 2019).
10.29	Amendment #3 to the Research and Development Agreement by and among the Registrant, Intrexon Corporation and The University of Texas M.D. Anderson Cancer Center dated as of November 14, 2017 (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 5, 2019).
10.30	Fourth Amendment to Research and Development Agreement, dated September 19, 2019 by and among the Registrant, The University of Texas MD Anderson Cancer Center and Precigen, Inc. (incorporated by reference to Exhibit 10.7 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 001-33038, filed November 7, 2019).
10.31#	Fifth Amendment to Research and Development Agreement, dated October 22, 2019 by and among the Registrant and The University of Texas MD Anderson Cancer Center (incorporated by reference to Exhibit 10.20 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 2, 2020).
10.32#	2019 Research and Development Agreement, dated October 22, 2019, by and between the Registrant and The University of Texas MD Anderson Cancer Center (incorporated by reference to Exhibit 10.21 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 2, 2020).
10.33#	Patent License Agreement, dated as of May 28, 2019, by and between the Registrant and the National Cancer Institute (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 001-33038, filed August 8, 2019).
10.34#	Amendment to Patent License Agreement, dated as of January 8, 2020, by and between the Registrant and the National Cancer Institute (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K, SEC File No. 001-33038, filed March 2, 2020).
10.35#	Second Amendment to Patent License Agreement, dated as of September 28, 2020, by and between the Registrant and the National Cancer Institute (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q, SEC File No. 000-33038, filed November 5, 2020).
10.36#	Cooperative Research and Development Agreement, dated January 9, 2017, by and among the Registrant, the National Cancer Institute, and Intrexon Corporation (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 26, 2019).
10.37	Amendment #1 to the Cooperative Research and Development Agreement, dated March 23, 2018, by and among the Registrant, National Cancer Institute, Intrexon Corporation and Precigen, Inc (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 26, 2019).
10.38#	Amendment #2 to the Cooperative Research and Development Agreement, dated February 1, 2019, by and among the National Cancer Institute, the Registrant and Precigen, Inc (incorporated by reference to Exhibit 10.3 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 26, 2019).

Exhibit No.	Description of Document
10.39*	Lease Agreement, dated as of October 15, 2019, by and between the Registrant and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center.
10.40*	First Amendment, dated as of April 7, 2020, to the Lease Agreement, dated as of October 15, 2019, by and between the Registrant and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center.
10.41*	Second Amendment, dated as of April 7, 2020, to the Lease Agreement, dated as of October 15, 2019, by and between the Registrant and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center.
10.42*	Third Amendment, dated as of December 15, 2020, to the Lease Agreement, dated as of October 15, 2019, by and between the Registrant and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center.
10.43*	Lease Agreement dated as of December 15, 2020, by and between the Registrant and The University of Texas System Board of Regents on behalf of The University of Texas M.D. Anderson Cancer Center.
10.44	Form of Securities Purchase Agreement, dated November 11, 2018, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed November 13, 2018).
10.45	Form of Registration Rights Agreement, dated November 11, 2018, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed November 13, 2018).
10.46	Form of Securities Purchase Agreement, dated July 26, 2019, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed August 1, 2019).
10.47	Form of Registration Rights Agreement, dated July 26, 2019, by and between the Registrant and certain investors (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed August 1, 2019).
10.48	Form of Securities Purchase Agreement, dated September 12, 2019, by and between the Registrant and an investor (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 13, 2019).
10.49	Form of Registration Rights Agreement, dated September 12, 2019, by and between the Registrant and an investor (incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K SEC File No. 001-33038, filed September 13, 2019).
10.50	Agreement, by and among ZIOPHARM Oncology, Inc., WaterMill Asset Management Corp. Robert W. Postma, Jamie Vieser, and Holger Weis, dated February 4, 2021 (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, SEC File No. 001-33038, filed February 5, 2021).
21.1*	Subsidiaries of the Registrant.
23.1*	Consent of Independent Registered Public Accounting Firm
24.1*	Power of Attorney (incorporated by reference to the signature page of this Annual Report on Form 10-K).
31.1*	Certification of Principal Executive Officer pursuant to Exchange Act Rule 13a-14(a) or 15(d)-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certification of Principal Financial Officer pursuant to Exchange Act Rule 13a-14(a) or 15(d)-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

Exhibit No.	Description of Document
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.
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.
101.INS*	Inline XBRL Instance Document
101.SCH*	Inline XBRL Taxonomy Extension Schema Document
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104*	Cover Page Interactive Data File—the cover page interactive data is embedded within the Inline XBRL document or included within the Exhibit 101 attachments

* Filed herewith.
** Furnished herewith.
\+ Indicates management contract or compensatory plan.
† Confidential treatment has been granted by the Securities and Exchange Commission as to certain portions of this document.
\# Portions of this document (indicated by "[***]") have been omitted because they are not material and would likely cause competitive harm to Ziopharm Oncology, Inc. if disclosed.

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.

ZIOPHARM ONCOLOGY, INC.

Date: March 1, 2021

By: /s/ Heidi Hagen
Heidi Hagen
Interim Chief Executive Officer
(*Principal Executive Officer*)

Date: March 1, 2021

By: /s/ Timothy Cunningham
Timothy Cunningham
Interim Chief Financial Officer
(*Principal Financial Officer*)

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Heidi Hagen and Robert Hadfield, jointly and severally, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her, and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this report, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises hereby ratifying and confirming all that said attorneys-in-fact and agents, or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ Heidi Hagen Heidi Hagen	Interim Chief Executive Officer and Director (*Principal Executive Officer*)	March 1, 2021
/s/ Timothy Cunningham Timothy Cunningham	Interim Chief Financial Officer (*Principal Financial Officer*)	March 1, 2021
/s/ Kevin G. Lafond Kevin G. Lafond	Senior Vice President Finance, Chief Accounting Officer and Treasurer (*Principal Accounting Officer*)	March 1, 2021
/s/ Christopher Bowden Christopher Bowden	Director	March 1, 2021
/s/ J. Kevin Buchi J. Kevin Buchi	Director	March 1, 2021

Signature	Title	Date
/s/ James Huang James Huang	Director	March 1, 2021
/s/ Robert Postma Robert Postma	Director	March 1, 2021
/s/ Mary Thistle Mary Thistle	Director	March 1, 2021
/s/ Jaime Vieser Jaime Vieser	Director	March 1, 2021
/s/ Holger Weis Holger Weis	Director	March 1, 2021

ZIOPHARM Oncology, Inc.

INDEX TO FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of
ZIOPHARM Oncology, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of ZIOPHARM Oncology, Inc. and subsidiaries (the Company) as of December 31, 2020 and 2019, the related statements of operations stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2020, and the related notes to the financial statements (collectively, the financial statements). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 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 accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control — Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission in 2013, and our report dated March 1, 2021 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with 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 audits 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 matter communicated below arises from the current-period audit of the financial statements that was communicated or required to be communicated to the Company's Audit Committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing a separate opinion on the matter or disclosures to which it relates.

Description of the Matter:

As discussed in Note 3 to the financial statements, the Company records costs for clinical and pre-clinical trial costs based upon estimates of costs incurred through the balance sheet date that have yet to be invoiced by the contract research organizations, clinical study sites, laboratories, consultants, or other vendors. The Company's accrual for clinical and pre-clinical trial expenses totaled $8.3 million at December 31, 2020.

We identified the accruals for clinical and pre-clinical trial expenses to be a critical audit matter because auditing the Company's accruals for clinical and pre-clinical trial expenses is complex due to the fact that information necessary to estimate the expense is accumulated from multiple sources. In addition, in certain circumstances, the determination of the nature and level of services that have been received during the reporting period requires judgment because the timing and pattern of vendor invoicing does not correspond to the level of services provided and there may be delays in invoicing from clinical study sites and other vendors.

How We Addressed the Matter in our Audit

Our audit procedures relating to the accruals of clinical and pre-clinical trial expenses included the following, among others:

- We obtained an understanding and tested the design and operating effectiveness of internal controls over the Company's process for recording accruals for clinical and pre-clinical trial expenses, including those related to accruing for patient enrollments and reviewing work performed by third party vendors in order to ensure expenses are properly accounted for in accordance with the underlying agreements and those related to management's review of the detail and correspondence with third parties.
- To test the completeness and valuation of the accrual for clinical and pre-clinical trial expenses, we performed audit procedures that included, among others:
  - Reading a selection of contracts with contract research organizations and clinical study sites to evaluate financial and certain other contractual terms;
  - Comparing the progress of clinical trials completed through the balance sheet date with information provided by the Company's operations personnel that oversee the clinical and pre-clinical trial activities;
  - Obtaining information directly from certain third parties which indicate the progress of clinical trials and research and development activities through the balance sheet date and compared that to the Company's recorded accrued expense balance.

/s/ RSM US LLP

We have served as the Company's auditor since 2010.

Boston, Massachusetts
March 1, 2021

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of
ZIOPHARM Oncology, Inc.

Opinion on the Internal Control Over Financial Reporting

We have audited ZIOPHARM Oncology, Inc. and subsidiaries' (the Company) 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 in 2013. In our opinion, the Company maintained, in all material respects, effective 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 in 2013.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the accompanying balance sheets of the Company as of December 31, 2020 and 2019, the related statements of operations stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2020, and the related notes to the financial statements of the Company and our report dated March 1, 2021 expressed an unqualified opinion.

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 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 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, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included 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/ RSM US LLP

Boston, Massachusetts
March 1, 2021

ZIOPHARM Oncology, Inc.

BALANCE SHEETS

(in thousands, except share and per share data)

	December 31, 2020	December 31, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 115,069	$ 79,741
Receivables	4,665	3,330
Prepaid expenses and other current assets	10,855	22,421
Total current assets	130,589	105,492
Property and equipment, net	10,231	1,110
Deposits	130	130
Right-of-use asset	4,650	2,272
Other non-current assets	745	110
Total assets	$ 146,345	$ 109,114
LIABILITIES, PREFERRED STOCK AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 960	$ 906
Accrued expenses	16,589	10,846
Lease liability - current portion	819	774
Total current liabilities	18,368	12,526
Lease liability - noncurrent portion	3,995	1,578
Total liabilities	22,363	14,104
Commitments and contingencies (Note 9)		
Preferred stock, $0.001 par value, 30,000,000 shares authorized		
Series 1 preferred stock, $1,200 stated value; 250,000 designated; 0 shares issued and outstanding at December 31, 2020 and 2019; liquidation value of $0 million at December 31, 2020 and 2019	—	—
Stockholders' equity:		
Common stock, $0.001 par value; 250,000,000 shares authorized; 214,591,906 and 181,803,320 shares issued and outstanding at December 31, 2020 and 2019, respectively	215	182
Additional paid-in capital	887,868	778,953
Accumulated deficit	(764,101)	(684,125)
Total stockholders' equity	123,982	95,010
Total liabilities and stockholders' equity	$ 146,345	$ 109,114

The accompanying notes are an integral part of these financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF OPERATIONS

(in thousands, except share and per share data)

	For the Year Ended December 31,		
	2020	2019	2018
Collaboration revenue	$ —	$ —	$ 146
Operating expenses:			
Research and development	52,696	38,331	34,134
General and administrative	27,665	19,527	19,918
Total operating expenses	80,361	57,858	54,052
Loss from operations	(80,361)	(57,858)	(53,906)
Other income, net	385	813	631
Non-cash inducement warrant expense	—	(60,751)	—
Change in fair value of derivative liabilities	—	—	158
Net loss	$ (79,976)	$ (117,796)	$ (53,117)
Preferred stock dividends	$ —	$ —	$ (16,998)
Settlement of a related party relationship	$ —	$ —	$ 207,361
Net income (loss) applicable to common stockholders	$ (79,976)	$ (117,796)	$ 137,246
Net income (loss) per share - basic	$ (0.38)	$ (0.70)	$ 0.96
Net income (loss) per share - diluted	$ (0.38)	$ (0.70)	$ 0.96
Weighted average common shares outstanding used to compute basic net income (loss) per share	209,636,456	167,952,114	143,508,674
Weighted average common shares outstanding used to compute diluted net income (loss) per share	209,636,456	167,952,114	143,710,160

The accompanying notes are an integral part of these financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CHANGES IN PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT)

(in thousands, except share and per share data)

	Series 1 Preferred Stock-Mezzanine		Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount			
Balance at December 31, 2017	119,644	$ 143,992	142,658,037	$ 143	$615,493	$ (712,442)	$ (96,806)
Adjustment for implementation of ASU No. 2014-09, Revenue from Contracts with Customers	—	—	—	—	—	(8,131)	(8,131)
Stock-based compensation	—	—	—	—	7,534	—	7,534
Issuance of restricted common stock	—	—	150,321	2	(1)	—	1
Exercise of employee stock options	—	—	104,166	2	240	—	242
Cancelled restricted common stock	—	—	(271,433)	(2)	3	—	1
Repurchase of restricted common stock	—	—	(514,349)	(3)	(1,621)	—	(1,624)
Issuance of warrants and common stock in a private placement, net of commissions and expenses of $2,898	—	—	18,939,394	19	47,082	—	47,101
Preferred stock dividends	11,415	16,775	—	—	(16,998)	—	(16,998)
Settlement of a related party relationship (Note 7)	(131,059)	(160,767)	—	—	—	207,361	207,361
Net loss	—	—	—	—	—	(53,117)	(53,117)
Balance at December 31, 2018	—	$ —	161,066,136	$ 161	$651,732	$ (566,329)	$ 85,564

The accompanying notes are an integral part of these financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CHANGES IN PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT) (Cont.)

(in thousands, except share and per share data)

	Series 1 Preferred Stock-Mezzanine		Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount			
Balance at December 31, 2018	—	$ —	161,066,136	$ 161	$ 651,732	$(566,329)	$ 85,564
Stock-based compensation			—	—	6,341	—	6,341
Issuance of restricted common stock			1,519,766	2	998	—	1,000
Exercise of employee stock options			443,051	—	1,219	—	1,219
Cancelled restricted common stock			(74,599)	—	—	—	—
Repurchase of restricted common stock			(225,339)	—	(653)	—	(653)
Issuance of inducement warrants			—	—	60,751	—	60,751
Issuance of common stock in connection with at the market offering, net of commssions and expenses of $0.1 million			1,271,274	1	6,084	—	6,085
Warrant exercise, net of commissions and expenses of $1.1 milliom			17,803,031	18	52,481	—	52,499
Net loss			—	—	—	(117,796)	(117,796)
Balance at December 31, 2019	—	$ —	181,803,320	$ 182	$ 778,953	$ (684,125)	$ 95,010

The accompanying notes are an integral part of these financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CHANGES IN PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT) (Cont.)

(in thousands, except share and per share data)

	Series 1 Preferred Stock-Mezzanine		Common Stock		Additional Paid In Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount			
Balance at December 31, 2019	—	$ —	$ 181,803,320	$ 182	$ 778,953	$ (684,125)	$ 95,010
Stock-based compensation	—	—	—	—	6,829	—	6,829
Exercise of employee stock options	—	—	252,799		442		442
Restricted stock awards	—	—	805,900	1	(1)	—	—
Cancelled restricted common stock	—	—	(194,897)	—	—	—	—
Issuance of common stock in connection with a public offering, net of commissions and expenses of $5,900	—	—	29,110,111	29	88,632	—	88,661
Issuance of common stock in connection with an at the market offering, net of commissions and expenses of $400	—	—	2,814,673	3	13,013	—	13,016
Net loss						(79,976)	(79,976)
Balance at December 31, 2020	—	$ —	214,591,906	$ 215	$ 887,868	$ (764,101)	$ 123,982

The accompanying notes are an integral part of these financial statements.

ZIOPHARM Oncology, Inc.

STATEMENTS OF CASH FLOWS

(in thousands)

	For the Year Ended December 31,		
	2020	**2019**	**2018**
Cash flows from operating activities:			
Net loss	$ (79,976)	$ (117,796)	$ (53,117)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation	1,128	629	575
Stock-based compensation	6,829	7,341	7,534
Non-cash inducement warrant expense	—	60,751	—
Change in fair value of derivative liabilities	—	—	(158)
Change in operating assets and liabilities:			
(Increase) decrease in:			
Receivables	(1,335)	(1,466)	(1,845)
Prepaid expenses and other current assets	11,566	(1,729)	(1,263)
Right of use assets	(2,378)	—	—
Deposits	—	(2)	—
Other noncurrent assets	(635)	9,431	3,942
Increase (decrease) in:			
Accounts payable	54	199	(3,709)
Accrued expenses	5,272	1,725	(1,145)
Deferred revenue	—	—	(146)
Deferred rent	—	—	(125)
Lease liabilities	2,462	63	—
Net cash used in operating activities	(57,013)	(40,854)	(49,457)
Cash flows from investing activities:			
Purchases of property and equipment	(9,778)	(284)	(459)
Net cash used in investing activities	(9,778)	(284)	(459)
Cash flows from financing activities:			
Proceeds from exercise of stock options	442	1,219	240
Issuance of restricted common stock	—	—	—
Repurchase of common stock	—	(653)	(1,622)
Proceeds from underwritten financing	—	—	47,101
Issuance of common stock upon exercise of warrants, net	—	52,499	—
Issuance of common stock in connection with a public offering, net	88,661		
Issuance of common stock in connection with an at the market offering, net	13,016	6,085	—
Cash paid for settlement of related party relationship	—	—	(5,408)
Net cash provided by financing activities	102,119	59,150	40,311
Net decrease in cash and cash equivalents, and restricted cash	35,328	18,012	(9,605)
Cash and cash equivalents, and restricted cash, beginning of period	79,741	61,729	71,334
Cash and cash equivalents, and restricted cash, end of period	$ 115,069	$ 79,741	$ 61,729
Supplementary disclosure of cash flow information:			
Bonus paid in common stock	$ —	$ 1,000	$ —
Fixed assets in accrued expenses	$ 471	$ 358	$ —
Supplementary disclosure of noncash investing and financing activities:			
Noncash portion of related party relationship settlement	$ —	$ —	$ 212,769
Payment of Series 1 preferred stock dividends in preferred stock	$ —	$ —	$ 16,998

The accompanying notes are an integral part of these financial statements.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

1. Organization

ZIOPHARM Oncology, Inc., which is referred to herein as "ZIOPHARM," or the "Company," is a biopharmaceutical company seeking to develop, acquire, and commercialize, on its own or with partners, a diverse portfolio of immuno-oncology therapies.

The Company's operations to date have consisted primarily of raising capital and conducting research and development. The Company's fiscal year ends on December 31.

The Company has operated at a loss since its inception in 2003 and has no recurring revenues from operations. The Company anticipates that losses will continue for the foreseeable future. As of December 31, 2020, the Company has approximately $115.1 million of cash and cash equivalents and the Company's accumulated deficit was approximately $764.1 million. Given the Company's current development plans, the Company anticipates its cash resources will be sufficient to fund its operations into the second quarter of 2022. The Company's ability to continue operations after its current cash resources are exhausted depends on its ability to obtain additional financing or to achieve profitable operations, as to which no assurances can be given. Cash requirements may vary materially from those now planned because of changes in the Company's focus and direction of its research and development programs, competitive and technical advances, patent developments, regulatory changes or other developments. If adequate additional funds are not available when required, or if the Company is unsuccessful in entering into partnership agreements for further development of our product candidates, management may need to curtail its development efforts and planned operations to conserve cash.

Our amended and restated certificate of incorporation authorizes us to issue 250,000,000 shares of common stock. As of February 24, 2020, there were 214,667,023 shares of common stock outstanding and an additional 31,115,329 shares of common stock reserved for issuance pursuant to outstanding stock options and warrants. Though we have no immediate plans to issue additional shares of common stock, other than in connection with our 2020 Equity Incentive Plan, we may need additional shares for business and financial purposes in the future.

In addition to these factors, our actual cash requirements may vary materially from our current expectations for a number of other factors that may include, but are not limited to, changes in the focus and direction of our development programs, competitive and technical advances, costs associated with the development of our product candidates, our ability to secure partnering arrangements, and the costs of filing, prosecuting, defending and enforcing our intellectual property rights. If we exhaust our capital reserves more quickly than anticipated, regardless of the reason, and we are unable to obtain additional financing on terms acceptable to us or at all, we will be unable to proceed with development of some or all of our product candidates on expected timelines and will be forced to prioritize among them.

We expect that we will need additional financing to support our long-term plans for clinical trials and new product development. We expect to finance our cash needs through the sale of equity securities, strategic collaborations and/or debt financings, or through other sources that may be dilutive to existing stockholders. There can be no assurance that we will be able to obtain funding from any of these sources or, if obtained, what the terms of such funding(s) may be, or that any amount that we are able to obtain will be adequate to support our working capital requirements until we achieve profitable operations.

2. Financings

February 2020 Public Offering

On February 5, 2020, the Company entered into an underwriting agreement with Jefferies, as representative of the several underwriters named therein, relating to the issuance and sale of 27,826,086 shares of its common

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

2. Financings (Continued)

stock. The price to the public in the offering was $3.25 per share, and the underwriters agreed to purchase the shares from the Company pursuant to the underwriting agreement at a purchase price of $3.055 per share. Under the terms of the underwriting agreement, the Company also granted the underwriters an option, exercisable for 30 days, to purchase up to an additional 4,173,912 shares of common stock at a purchase price of $3.055 per share.

The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The underwriters purchased the 27,826,086 shares on February 5, 2020. The net proceeds from the offering were approximately $84.8 million after deducting underwriting discounts and offering expenses paid by the Company.

On March 10, 2020, the underwriters exercised their option to purchase an additional 1,284,025 shares. The net proceeds were approximately $3.9 million after deducting underwriting discounts and offering expenses paid by the Company.

At-the-Market Offering Program

During the year ended December 31, 2020, the Company sold an aggregate of 2,814,673 shares of its common stock. The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $13.0 million after deducting underwriting discounts and offering expenses payable by the Company.

During the year ended December 31, 2019, the Company sold an aggregate of 1,271,274 shares of its common stock. The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $6.1 million after deducting underwriting discounts and offering expenses payable by the Company.

November 2018 Private Placement and 2019 Inducement Warrants

On November 11, 2018, the Company entered into a securities purchase agreement with certain institutional and accredited investors pursuant to which it sold an aggregate of 18,939,394 immediately separable units at a price per unit of $2.64 to such investors, for net proceeds of approximately $47.1 million. Each unit was comprised of (i) one share of the Company's common stock, par value $0.001 per share and (ii) a warrant to purchase one share of common stock. The securities issued by the Company pursuant to the securities purchase agreement and to be issued upon exercise of the warrants were not registered under the Securities Act and may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements. When issuing the units, the Company relied on the private placement exemption from registration provided by Section 4(a)(2) of the Securities Act and by Rule 506 of Registration D, promulgated thereunder and on similar exemptions under applicable state laws and filed a Form D with the SEC on November 19, 2018. On February 7, 2019, the Company filed a registration statement on Form S-3 registering the resale of shares issued pursuant to the securities purchase agreement and the resale of shares that may be issued upon exercise of the warrants.

July 2019 and September 2019 Warrant Exercise

On July 26, 2019 and September 12, 2019, the Company entered into agreements for the exercise of the warrants issued in November 2018 to purchase common stock in a private placement. Pursuant to the terms of the

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

2. Financings (Continued)

agreements, investors exercised warrants for an aggregate of 17,803,031 shares of common stock, at an exercise price of $3.01 per share. The Company issued new warrants to purchase up to 17,803,031 additional shares of common stock as an inducement for warrant holders to exercise their 2018 warrants early. The new warrants will become exercisable six months following the date of issuance, will expire on the fifth anniversary of the initial exercise date, and have an exercise price of $7.00 (Note 10). Proceeds from the exercise of the warrants, before deducting placement agent fees and other related expenses of $1.1 million were approximately $52.5 million. For the year ended December 31, 2019, the Company also recorded $60.8 million in non-cash inducement warrant expense, which is included in the Company's statement of operations.

3. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America or U.S. GAAP.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Although the Company regularly assesses these estimates, actual results could differ from those estimates. Changes in estimates are recorded in the period in which they become known.

The Company's most significant estimates and judgments used in the preparation of the financial statements are:

- Clinical trial expenses and other research and development expenses;
- Collaboration agreements;
- Fair value measurements of stock-based compensation and; and
- Income taxes.

Impact of COVID-19 Pandemic

With the ongoing COVID-19 pandemic, the Company has implemented business continuity plans designed to address and mitigate the impact of the COVID-19 pandemic on its business and operations. The Company continues to evaluate the impact of the COVID-19 global pandemic on patients, healthcare providers and its employees, as well as its operations and the operations of its business partners and healthcare communities. In response to the COVID-19 pandemic, the Company has implemented policies at its locations to mitigate the risk of exposure to COVID-19 by its personnel, including restrictions on the number of staff in any given research and development laboratory and a work-from-home policy applicable to the majority of our personnel. The extent to which the COVID-19 pandemic impacts the Company's business, clinical development and regulatory efforts and the value of its common stock, will depend on future developments that are highly uncertain and cannot be predicted with confidence at this time, such as the ultimate duration of the pandemic, travel restrictions, quarantines, social distancing and business closure requirements, and the effectiveness of actions taken globally to contain and treat the disease. The global economic slowdown, the overall disruption of global

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

healthcare systems and the other risks and uncertainties associated with the COVID-19 pandemic could have a material adverse effect on the Company's business, financial condition, results of operations and growth prospects.

Subsequent Events

The Company evaluated all events and transactions that occurred after the balance sheet date through the date of the Annual Report. Except as disclosed below, the Company did not have any material subsequent events that impacted its financial statements or disclosures.

On February 4, 2021, the Company entered into an agreement with Watermill Asset Management Corp. and Robert W. Postma. Pursuant to the Settlement Agreement, the Company increased the size of the Company's Board of Directors from eight to nine directors and appointed Mr. Postma to fill the newly created directorship. Mr. Postma will serve an initial term expiring at the Company's 2021 annual meeting of stockholders. Additionally, the Company agreed to nominate each of Mr. Postma, Jaime Vieser and Holger Weis for election at any stockholder meeting at which directors are to be elected and will recommend, support, and solicit proxies for the election of each of Messrs. Postma, Vieser and Weis. Additionally, the Company agreed to reimburse Watermill for up to $400 thousand of its reasonable out-of-pocket fees and expenses. This agreement also resulted in $1.0 million in strategic advisory services becoming due. These costs were expensed during the year ended December 31, 2020 and included in accrued expenses on the balance sheet.

Organizational Changes

During the year ended December 31, 2020 there were changes in the members of the Board of Directors. The following Directors left during the quarter: Scott Braunstein on November 16, 2020, Elan Ezickson on December 3, 2020, and Scott Tarriff on December 15, 2020. Messers. Braunstein and Ezickson received an extended period to exercise stock options along accelerated vesting of restricted stock. In turn, the following Directors joined the board: Mary Thistle on November 15, 2020, Jaime Vieser on December 15, 2020, and Holger Weis on December 15, 2020.

On December 10, 2020, Satyavrat Shukla notified the Company of his decision to resign from the position of Chief Financial Officer of the Company, effective December 31, 2020. Included in his separation agreement, Mr. Shukla was to receive his annual bonus which was accrued at December 31, 2020.

Additionally, on February 25, 2021, the Company announced that Heidi Hagen, formerly Lead Independent Director, was appointed Interim Chief Executive Officer, replacing Dr. Laurence Cooper, MD., Ph.D. Ms. Hagen is remaining a member of the Board of Directors. Dr. Cooper is also stepping down from his seat on the Board of Directors and is expected to continue with the Company in a scientific advisory capacity to support the Company's R&D programs.

Cash and Cash Equivalents

Cash equivalents consist primarily of demand deposit accounts, certificates of deposit and deposits in short-term U.S. treasury money market mutual funds. Cash equivalents are stated at cost, which approximates fair market value.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

Concentrations of Credit Risk

Financial instruments which potentially subject the Company to concentrations of credit risk consist principally of cash and cash equivalents. The Company maintains cash accounts in commercial banks, which may, at times, exceed federally insured limits. The Company has not experienced any losses in such accounts. The Company believes it is not exposed to any significant credit risk on cash and cash equivalents.

Property and Equipment

Property, plant and equipment are stated at cost, less accumulated depreciation and amortization. Expenditures for maintenance and repairs are charged to expense while the costs of significant improvements are capitalized. Depreciation and amortization is calculated on a straight-line basis using the following periods, which represent the estimated useful lives of the assets:

- Office and computer equipment 3 years
- Software 3 years
- Laboratory equipment 5 years
- Leasehold improvements Life of the lease

Costs, including certain design, construction and installation costs related to assets that are under construction and are in the process of being readied for their intended use, are recorded as construction in progress and are not depreciated until such time as the subject asset is placed in service. Repairs and maintenance that do not extend the useful life of the asset are expensed as incurred. Upon sale, retirement, or other disposition of these assets, the costs and related accumulated depreciation are removed from the respective accounts and any gain or loss on the disposition is included on our Statements of Operations.

Long-Lived Assets

Assessments of long-lived assets and the remaining useful lives of such long-lived assets are reviewed for impairment whenever a triggering event occurs or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. An asset, or group of assets, are considered to be impaired when the undiscounted estimated net cash flows expected to be generated by the asset, or group of assets, are less than its carrying amount. The impairment recognized is the amount by which the carrying amount exceeds the fair market value of the impaired asset, or group of assets, based on the present value of the expected future cash flows associated with the use of the asset.

Operating Segments

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, the Company's 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 segment and does not track expenses on a program-by-program basis.

Warrants

The Company assesses whether warrants issued require accounting as derivatives. The Company determined that the warrants were (1) indexed to the Company's own stock and (2) classified in stockholders' equity in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 815, *Derivatives and Hedging*. As such, the Company has concluded the warrants meet the scope exception for determining whether the instruments require accounting as derivatives and should be classified in stockholders' equity.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

Fair Value Measurements

The Company has certain financial assets and liabilities recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements.

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Assets and liabilities measured at fair value on a recurring basis as of December 31, 2020 and 2019 are as follows:

($ in thousands)		Fair Value Measurements at Reporting Date Using		
Description	Balance as of December 31, 2020	Quoted Prices in Active Markets for Identical Assets/Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents	$ 75,990	$ 75,990	$ —	$ —

($ in thousands)		Fair Value Measurements at Reporting Date Using		
Description	Balance as of December 31, 2019	Quoted Prices in Active Markets for Identical Assets/Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents	$ 68,031	$ 68,031	$ —	$ —

The cash equivalents represent demand deposit accounts and deposits in a short-term United States treasury money market mutual fund quoted in an active market and classified as a Level 1 asset.

Revenue Recognition from Collaboration Agreements

The Company adopted Accounting Standards Codification, or ASC Topic 606, *Revenue from Contracts with Customers*, or ASC 606, using the modified retrospective approach on January 1, 2018. The Company completed its assessment and the implementation resulted in a cumulative effect adjustment to accumulated deficit as of January 1, 2018 of approximately $8.1 million and a corresponding increase to the contract liability (formerly deferred revenue). The adjustment to the Company's financial statements due to the adoption of ASC 606 is related to the Company's Ares Trading Agreement (Note 6), which was the Company's sole open revenue contract outstanding at January 1, 2018.

There was no revenue for the years ended December 31, 2020 and 2019.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

The Company primarily generates revenue through collaboration arrangements with strategic partners for the development and commercialization of product candidates. Commencing January 1, 2018, the Company recognized revenue in accordance with ASC 606 which replaced ASC 605, *Multiple Element Arrangements*, as used in historical years. The core principle of ASC 606 is that an entity should recognize revenue to depict the transfer of promised goods and/or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods and/or services. To determine the appropriate amount of revenue to be recognized for arrangements that the Company determines are within the scope of ASC 606, the Company performs the following steps: (i) identify the contract(s) with the customer, (ii) identify the performance obligations in the contract, (iii) determine the transaction price, (iv) allocate the transaction price to the performance obligations in the contract and (v) recognize revenue when (or as) each performance obligation is satisfied.

The Company recognizes collaboration revenue under certain of the Company's license or collaboration agreements that are within the scope of ASC 606. The Company's contracts with customers typically include promises related to licenses to intellectual property, research and development services and options to purchase additional goods and/or services. If the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue from non-refundable, up-front fees allocated to the license when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For licenses that are bundled with other promises, the Company utilizes judgement to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable, up-front fees. Contracts that include an option to acquire additional goods and/or services are evaluated to determine if such option provides a material right to the customer that it would not have received without entering into the contract. If so, the option is accounted for as a separate performance obligation. If not, the option is considered a marketing offer which would be accounted for as a separate contract upon the customer's election.

The terms of the Company's arrangements with customers typically include the payment of one or more of the following: (i) non-refundable, up-front payment, (ii) development, regulatory and commercial milestone payments, (iii) future options and (iv) royalties on net sales of licensed products. Accordingly, the transaction price is generally comprised of a fixed fee due at contract inception and variable consideration in the form of milestone payments due upon the achievement of specified events and tiered royalties earned when customers recognize net sales of licensed products. The Company measures the transaction price based on the amount of consideration to which it expects to be entitled in exchange for transferring the promised goods and/or services to the customer. The Company utilizes the most likely amount method to estimate the amount of variable consideration, to predict the amount of consideration to which it will be entitled for its one open contract. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. At the inception of each arrangement that includes development and regulatory milestone payments, the Company evaluates whether the associated event is considered probable of achievement and estimates the amount to be included in the transaction price using the most likely amount method. Milestone payments that are not within the control of the Company or the licensee, such as those dependent upon receipt of regulatory approval, are not considered to be probable of achievement until the triggering event occurs. At the end of each reporting period, the Company reevaluates the probability of achievement of each milestone and any related constraint, and if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment. For arrangements that include sales-based royalties, including milestone

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

payments based upon the achievement of a certain level of product sales, the Company recognizes revenue upon the later of: (i) when the related sales occur or (ii) when the performance obligation to which some or all of the payment has been allocated has been satisfied (or partially satisfied). To date, the Company has not recognized any development, regulatory or commercial milestones or royalty revenue resulting from any of its collaboration arrangements. Consideration that would be received for optional goods and/or services is excluded from the transaction price at contract inception.

The Company allocates the transaction price to each performance obligation identified in the contract on a relative standalone selling price basis. However, certain components of variable consideration are allocated specifically to one or more particular performance obligations in a contact to the extent both of the following criteria are met: (i) the terms of the payment relate specifically to the efforts to satisfy the performance obligation or transfer the distinct good or service and (ii) allocating the variable amount of consideration entirely to the performance obligation or the distinct good or service is consistent with the allocation objective of the standard whereby the amount allocated depicts the amount of consideration to which the entity expects to be entitled in exchange for transferring the promised goods or services. The Company develops assumptions that require judgment to determine the standalone selling price for each performance obligation identified in each contract. The key assumptions utilized in determining the standalone selling price for each performance obligation may include forecasted revenues, development timelines, estimated research and development costs, discount rates, likelihood of exercise and probabilities of technical and regulatory success.

Revenue is recognized based on the amount of the transaction price that is allocated to each respective performance obligation when or as the performance obligation is satisfied by transferring a promised good and/or service to the customer. For performance obligations that are satisfied over time, the Company recognizes revenue by measuring the progress toward complete satisfaction of the performance obligation using a single method of measuring progress which depicts the performance in transferring control of the associated goods and/or services to the customer. The Company uses input methods to measure the progress toward the complete satisfaction of performance obligations satisfied over time. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenue and net loss in the period of adjustment.

The Company recognized the upfront payment received in 2015 associated with a former open contract as a contract liability upon receipt of payment as it requires deferral of revenue recognition to a future period until the Company performs its obligations under the arrangement. Amounts expected to be recognized as revenue within the twelve months following the balance sheet date were classified in current liabilities. Amounts not expected to be recognized as revenue within the twelve months following the balance sheet date were classified as contract liabilities, net of current portion. The Company determined that there were three performance obligations; the first performance obligation consists of the license and research development services and the other two performance obligations are material rights as it relates to potential future targets that have not yet been identified. As described above, the transaction price of $57.5 million was allocated to the performance obligations based on their relative standalone selling prices.

There were multiple distinct performance obligations, including material rights; thus, the Company allocated the transaction price to each distinct performance obligation based on its relative standalone selling price. The standalone selling price is generally determined based on the prices charged to customers or using expected cost-plus margin. Revenue is recognized by measuring the progress toward complete satisfaction of the performance obligations using an input measure. Furthermore, the Company has not capitalized any contract costs under the guidance in ASC 340-40, *Other Assets and Deferred Costs: Contracts with Customers*.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

The Company did not believe that any variable consideration should be included in the transaction price at the date of adoption of ASC 606 on January 1, 2018. Such assessment considered the application of the constraint to ensure that estimates of variable consideration would be included in the transaction price only to the extent the Company had a high degree of confidence that revenue would not be reversed in a subsequent reporting period. The Company will re-evaluate the transaction price, including the estimated variable consideration included in the transaction price and all constrained amounts, in each reporting period and as other changes in circumstances occur.

Impact of Topic 606 Adoption

As a result of adopting ASC 606, the Company recorded an $8.1 million adjustment to the opening balance of accumulated deficit in the first quarter of 2018 as a result of the treatment of the up-front consideration received in July 2015 under ASC 605-25 versus ASC 606. Refer below for a summary of the amount by which each financial statement line item was affected by the impact of the cumulative adjustment:

($ in thousands)	Impact of Topic 606 Adoption on the Balance Sheet as of January 1, 2018		
Description	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Contract liability, current portion	$ 622	$ (5,767)	$ 6,389
Contract liability, net of current portion	$ 49,037	$ 13,898	$ 35,139
Accumulated deficit	$ (720,573)	$ (8,131)	$ (712,442)

($ in thousands)	Impact of Topic 606 Adoption on the Statement of Operations for the Year Ended December 31, 2018		
Description	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Collaboration revenue	$ 146	$ (4,732)	$ 4,878
Net loss	$ (53,117)	$ (4,732)	$ (48,385)
Net income (loss) applicable to common shareholders	$ 137,246	$ (4,732)	$ 141,978
Net income (loss) per share - basic	$ 0.96	$ (0.03)	$ 0.99
Net income (loss) per share - diluted	$ 0.96	$ (0.03)	$ 0.99

($ in thousands)	Impact of Topic 606 Adoption on the Statement of Cash Flows for the Year Ended December 31, 2018		
Description	As reported under Topic 606	Adjustments	Balances without adoption of Topic 606
Net loss	$ (53,117)	$ (4,732)	$ (48,385)
Changes in contract liability	$ —	$ —	$ —

The most significant change above relates to the Company's collaboration revenue, which to date has been exclusively generated from its collaboration arrangement with Ares Trading and PGEN Therapeutics, a wholly owned subsidiary of Precigen Inc., or Precigen, which was formerly known as Intrexon Corporation, (Note 7). Under ASC 605, the Company accounted for the up-front payment over the estimated period of performance of

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

the research and development services which was estimated to be 9 years. In connection with the adoption of ASC 606, the Company uses cost-based input method to measure progress because such method best reflects the satisfaction of the performance obligation. In applying the cost-based input method of revenue recognition, the Company uses actual costs incurred relative to the budgeted costs to complete the research programs. These costs consist primarily of internal full-time equivalent effort and third-party contract costs. Revenue is recognized based on actual costs incurred as a percentage of total budgeted costs. As a result, although the performance obligations noted above and identified under ASC 606 were generally consistent with the units of account identified under ASC 605, the timing of the allocation of the transaction price to the identified performance obligations under ASC 606 differed from the allocations of consideration under ASC 605. Accordingly, the transaction price ultimately allocated to each performance obligation under ASC 606 differed from the amounts allocated under ASC 605. Additionally, at December 31, 2018, the contract liability is $0 under both methods of revenue recognition (Note 7). There is no revenue related to the years ended December 31, 2020 and 2019.

Research and Development Costs

As part of the process of preparing our financial statements, we are required to estimate our accrued research and development 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 costs incurred for the services when we have not yet been invoiced or otherwise notified of the actual costs. The majority of our service providers invoice us in arrears for services performed, on a predetermined schedule or when contractual milestones are met; however, a few require advanced payments. 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. Examples of estimated accrued research and development expenses include fees paid to:

- CROs in connection with performing research services on our behalf and clinical trials,
- investigative sites or other providers in connection with clinical trials,
- vendors in connection with preclinical and clinical development activities, and
- vendors related to product manufacturing, development, and distribution of preclinical and clinical supplies.

We base our expenses related to preclinical studies and clinical trials on our estimates of the services received and efforts expended pursuant to quotes and contracts with multiple CROs that conduct and manage clinical trials on our behalf. The financial terms of these agreements are 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 vendors will exceed the level of services provided and result in a prepayment of the clinical expense. Payments under some of these contracts depend on factors such as the completion of clinical trial milestones. In accruing service fees, we estimate the time period over which services will be performed, enrollment of patients, number of sites activated 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 amount of prepaid expense accordingly. Although we do not expect our estimates to be materially different from amounts actually incurred, our understanding of the status and timing of services performed relative to the actual status and timing of services performed may vary and may result in us reporting amounts that are too high or too low in any particular period. To date, we have not made any material adjustments to our prior estimates of accrued research and development expenses.

3. Summary of Significant Accounting Policies (Continued)

Income Taxes

Income taxes are accounted for under the liability method. Deferred tax assets and liabilities are recognized for the estimated future tax consequences of temporary differences between the financial statement carrying amounts and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which the temporary differences are expected to be recovered or settled. The Company evaluates the realizability of its deferred tax assets and establishes a valuation allowance when it is more likely than not that all or a portion of deferred tax assets will not be realized.

The Company accounts for uncertain tax positions using a "more-likely-than-not" threshold for recognizing and resolving uncertain tax positions. The evaluation of uncertain tax positions is based on factors including, but not limited to, changes in tax law, the measurement of tax positions taken or expected to be taken in tax returns, the effective settlement of matters subject to audit, new audit activity and changes in facts or circumstances related to a tax position. The Company evaluates this tax position on an annual basis. The Company also accrues for potential interest and penalties, related to unrecognized tax benefits in income tax expense (Note 11).

Accounting for Stock-Based Compensation

Stock-based compensation cost is measured at the grant date, based on the estimated fair value of the award, and is recognized as expense over the employee's requisite service period. Stock-based compensation expense is based on the number of awards ultimately expected to vest and is therefore reduced for an estimate of the awards that are expected to be forfeited prior to vesting. Consistent with prior years, the Company uses the Black-Scholes option pricing model which requires estimates of the expected term option holders will retain their options before exercising them and the estimated volatility of the Company's common stock price over the expected term.

The Company recognizes the full impact of its share-based employee payment plans in the statements of operations for each of the years ended December 31, 2020, 2019, and 2018 and did not capitalize any such costs on the balance sheets. The Company recognized $4.3 million, $4.0 million, and $3.0 million of compensation expense related to stock options during the years ended December 31, 2020, 2019, and 2018, respectively. In the years ended December 31, 2020, 2019, and 2018, the Company recognized $2.5 million, $2.3 million, and $4.5 million of compensation expense, respectively, related to restricted stock (Note 14). The total compensation expense relating to vesting of stock options and restricted stock awards for the years ended December 31, 2020, 2019, and 2018 was $6.8 million, $6.3 million, and $7.5 million, respectively.The following table presents share-based compensation expense included in the Company's Statements of Operations:

	Year ended December 31,		
(in thousands)	**2020**	**2019**	**2018**
Research and development	$ 2,098	$ 1,461	$ 1,683
General and administrative	4,731	4,880	5,851
Share based employee compensation expense before tax	6,829	6,341	7,534
Income tax benefit	—	—	—
Net share based employee compensation expense	$ 6,829	$ 6,341	$ 7,534

The fair value of each stock option is estimated at the date of grant using the Black-Scholes option pricing model. The estimated weighted-average fair value of stock options granted to employees in 2020, 2019, and 2018 was

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

approximately $2.15, $2.47, and $1.64 per share, respectively. Assumptions regarding volatility, expected term, dividend yield and risk-free interest rate are required for the Black-Scholes model. The volatility assumption is based on the Company's historical experience. The risk-free interest rate is based on a U.S. treasury note with a maturity similar to the option award's expected life. The expected life represents the average period of time that options granted are expected to be outstanding. The Company calculated expected term using the simplified method described in SEC Staff Accounting Bulletin, or SAB, No. 107 and No. 110 as it continues to meet the requirements promulgated in SAB No. 110. The assumptions for volatility, expected life, dividend yield and risk-free interest rate are presented in the table below:

	2020	2019	2018
Weighted average risk-free interest rate	0.36 - 1.68%	1.39 - 2.53%	2.55 - 3.06%
Expected life in years	5.75 - 6.25	5.75 - 6.25	6
Expected volatility	71.11 - 74.41%	71.39 - 85.00%	80.75 - 84.71%
Expected dividend yield	0	0	0

Net Income (Loss) Per Share

Basic net loss per share is computed by dividing net income (loss) by the weighted average number of common shares outstanding for the period. Diluted earnings (loss) per share is computed using the weighted-average number of common shares outstanding during the period, plus the dilutive effect of outstanding options and warrants, using the treasury stock method and the average market price of the Company's common stock during the applicable period.

	For the Year Ended December 31,		
in thousands, except share and per share data	2020	2019	2018
Basic			
Net loss	$ (79,976)	$ (117,796)	$ (53,117)
Preferred stock dividends	—	—	(16,998)
Settlement of a related party relationship	—	—	207,361
Net income / (loss) applicable to common shareholders	$ (79,976)	$ (117,796)	$ 137,246
Weighted-average common shares outstanding	209,636,456	167,952,114	143,508,674
Earnings per share, basic	$ (0.38)	$ (0.70)	$ 0.96
Diluted			
Net Loss	$ (79,976)	$ (117,796)	$ (53,117)
Preferred stock dividends	—	—	(16,998)
Precigen license transaction	—	—	207,361
Net income / (loss) applicable to common shareholders	$ (79,976)	$ (117,796)	$ 137,246
Weighted-average common shares outstanding	209,636,456	167,952,114	143,508,674

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

3. Summary of Significant Accounting Policies (Continued)

in thousands, except share and per share data	For the Year Ended December 31, 2020	2019	2018
Effect of dilutive securities			
Stock options	—	—	201,362
Unvested restricted common stock	—	—	124
Warrants	—	—	—
Dilutive potential common shares	—	—	201,486
Shares used in calculating diluted earnings per share	209,636,456	167,952,114	143,710,160
Earnings per share, diluted	$ (0.38)	$ (0.70)	$ 0.96

Certain shares related to some of the Company's outstanding common stock options, unvested restricted stock, preferred stock, and warrants have not been included in the computation of diluted net earnings (loss) per share for the years ended December 31, 2020, 2019 and 2018 as the result would be antidilutive. Such potential common shares on December 31, 2020, 2019, and 2018 consist of the following:

	December 31, 2020	2019	2018
Stock options	6,832,386	6,872,879	5,075,723
Inducement stock options	588,333	1,030,000	500,000
Unvested restricted stock	786,280	939,636	681,946
Warrants	22,272,727	22,272,727	18,939,394
	30,479,726	31,115,242	25,197,063

During the year ended December 31, 2018, the Company and PGEN entered into a License Agreement to replace all existing agreements between the companies that provides the Company with certain exclusive and non-exclusive rights to technology controlled by PGEN. The License Agreement was dated October 5, 2018. In consideration of the Company entering into the License Agreement, Precigen agreed to forfeit and return to the Company all shares of the Company's Series 1 Preferred Stock held by or payable to Precigen as of the date of the License Agreement (Note 7).

New Accounting Pronouncements

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which is intended to simplify various aspects related to accounting for income taxes. ASU 2019-12 removes certain exceptions to the general principles in ASC 740 and also clarifies and amends existing guidance to improve consistent application. This guidance is effective for public entities for fiscal years beginning after December 15, 2020, and for interim periods within those fiscal years. The Company is currently evaluating the impact of this new guidance on its consolidated financial statements.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

4. Property and Equipment, net

Property and equipment, net, consists of the following:

(in thousands)	December 31, 2020	2019
Office and computer equipment	$ 869	$ 1,436
Software	1,153	1,030
Leasehold improvements	7,457	1,195
Research and development equipment	5,401	1,892
Construction-in-process	313	389
	15,193	5,942
Less: accumulated depreciation	(4,962)	(4,832)
Property and equipment, net	$10,231	$ 1,110

Depreciation expense charged to the statement of operations for the years ended December 31, 2020, 2019, and 2018 was $1.1 million, $629 thousand, and $575 thousand, respectively (Note 3).

5. Accrued Expenses

Accrued expenses consist of the following:

(in thousands)	December 31, 2020	2019
Clinical services	$ 4,450	$ 5,247
Employee compensation	3,298	1,910
Preclinical services	749	1,147
Professional services	3,993	991
Manufacturing services	3,159	586
Accrued vacation	725	489
Payroll taxes and benefits	16	284
Other consulting services	199	192
Total	$16,589	$10,846

6. Related Party Transactions

Collaborations with Precigen/ PGEN

During the year ended December 31, 2018, the Company and PGEN entered into an Exclusive License Agreement (Note 7).

During the year ended December 31, 2018, the Company issued an aggregate of 11,415 shares of Series 1 preferred stock to Precigen, the holder of all of the outstanding shares of the Company's Series 1 preferred stock, as monthly dividend payments. The Company recorded such shares of Series 1 preferred stock at a fair value of $18.9 million, which is a component of temporary equity and recorded a loss on the change of the derivative liabilities in the amount of $1.3 million. The Series 1 preferred stock was cancelled on October 5, 2018. See Notes 3 and 13 for additional discussion regarding the accounting for and valuation of these derivative financial instruments.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

6. Related Party Transactions (Continued)

During the years ended December 31, 2020, 2019, and 2018, the Company recorded expenses of $0.1 million, $3.0 million, and $8.1 million, respectively, for services performed by Precigen. As of December 31, 2019, the Company recorded $0.1 million in current liabilities on its balance sheet for amounts due to Precigen.

Collaboration with PGEN and MD Anderson

On January 13, 2015, the Company, together with Precigen, entered into the MD Anderson License with MD Anderson (which Precigen subsequently assigned to PGEN). Pursuant to the MD Anderson License, the company, together with PGEN, hold an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson including technologies relating to novel CAR T-cell therapies, non-viral gene transfer systems, genetic modification and/or propagation of immune cells and other cellular therapy approaches, Natural Killer, or NK Cells, and TCRs, arising from the laboratory of Laurence Cooper, M.D., Ph.D., who served as the Company's Chief Executive Officer from May 2015 to February 2021 and was formerly a tenured professor of pediatrics at MD Anderson. In partial consideration for entering into the MD Anderson License, the Company issued MD Anderson an aggregate of 11,722,163 shares of common stock for which the Company incurred a $67.3 million charge recorded in 2015.

During the years ending December 31, 2020, 2019, and 2018, the Company did not make any payments to MD Anderson, and the total aggregate payments made in connection with this agreement are $41.9 million. The net balance of cash resources on hand at MD Anderson available to offset expenses and future costs is $8.1 million, which is included in prepaid expenses and other current assets. The classification is based on management's current estimate of plans to utilize the prepaid balance and is subject to revision on a quarterly basis.

Collaboration with Vineti Inc.

On July 9, 2020, the Company entered into a master service agreement and statement of work with Vineti, Inc., or Vineti. Pursuant to the agreements, Vineti is developing a software platform to coordinate and orchestrate the order, cell collection and manufacturing process for the Company's TCR-T clinical programs. Heidi Hagen, who became a director of the Company in June 2019 and our Interim Chief Executive Officer on February 25, 2021, is a co-founder and former officer, of Vineti. In the year ended December 31, 2020, the Company recorded expenses of approximately $29 thousand for services performed by Vineti.

Joint Venture with TriArm Therapeutics/Eden Biocell

On December 19, 2018, the Company and TriArm launched Eden BioCell as a joint venture to lead commercialization of the Company's Sleeping Beauty-generated CAR-T therapies in the People's Republic of China (including Macau and Hong Kong), Taiwan and Korea. The Company licensed to Eden BioCell the rights in Greater China for its third-generation Sleeping Beauty-generated CAR-T therapies targeting the CD19 antigen. Eden BioCell is owned equally by the Company and TriArm and the parties share decision-making authority. TriArm has contributed $10.0 million to Eden BioCell and has committed up to an additional $25.0 million to this joint venture. TriArm also manages all clinical development in the territory pursuant to a Master Services Agreement between TriArm and Eden BioCell. James Huang, who became a director of the Company in July 2020, Chairman of the Board of Directors in January 2021 and Executive Chairman in February 2021, was the founder and serves as managing partner of Panacea Venture, which is an investor in TriArm. Mr. Huang also serves as a member of Eden BioCell's Board of Directors.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

7. Settlement of a Related Party Relationship

Exclusive License Agreement with PGEN Therapeutics

On October 5, 2018, the Company entered into the license agreement with PGEN. As between the Company and PGEN, the terms of the License Agreement replace and supersede the terms of: (a) that certain Exclusive Channel Partner Agreement by and between the Company and Precigen, dated January 6, 2011, as amended by the First Amendment to Exclusive Channel Partner Agreement effective September 13, 2011, the Second Amendment to the Exclusive Channel Partner Agreement effective March 27, 2015, and the Third Amendment to Exclusive Channel Partner Agreement effective June 29, 2016, which was subsequently assigned by Precigen to PGEN; (b) certain rights and obligations pursuant to that certain License and Collaboration Agreement effective March 27, 2015 between ZIOPHARM, Precigen and ARES TRADING Trading S.A., or Ares Trading, a subsidiary of Merck KGaA, or Merck, as assigned by Precigen to PGEN, or the Ares Trading Agreement; (c) that certain License Agreement between the Company, Precigen, and MD Anderson, with an effective date of January 13, 2015, or the MD Anderson License, which was subsequently assigned by Precigen and assumed by PGEN effective as of January 1, 2018; and (d) that certain Research and Development Agreement between the Company, Precigen and MD Anderson with an effective date of August 17, 2015, or the Research and Development Agreement, and any amendments or statements of work thereto.

Pursuant to the terms of the License Agreement, PGEN has granted the Company exclusive, worldwide rights to research, develop and commercialize (i) products utilizing PGEN's RheoSwitch® gene switch, or RTS®, for the treatment of cancer, referred to as IL-12 Products, (ii) CAR products directed to (A) CD19 for the treatment of cancer, referred to as CD19 Products, and (B) a second target for the treatment of cancer, subject to the rights of Ares Trading to pursue such target under the Ares Trading Agreement, and (iii) T-cell receptor, or TCR, products designed for neoantigens for the treatment of cancer. PGEN has also granted the Company an exclusive, worldwide, royalty-bearing, sub-licensable license for certain patents relating to the *Sleeping Beauty* technology to research, develop and commercialize TCR products for both neoantigens and shared antigens for the treatment of cancer, referred to as TCR Products.

The Company is solely responsible for all aspects of the research, development and commercialization of the exclusively licensed products for the treatment of cancer. The Company is required to use commercially reasonable efforts to develop and commercialize IL-12 Products and CD19 Products and after a two-year period, the TCR Products.

In consideration of the licenses and other rights granted by PGEN, the Company pays PGEN an annual license fee of $0.1 million. The Company recorded a liability for $0.1 million for the years ended December 31, 2019, and has included this amount in accrued expenses on the balance sheet.

The Company will also make milestone payments totaling up to an additional $52.5 million for each exclusively licensed program upon the initiation of later stage clinical trials and upon the approval of exclusively licensed products in various jurisdictions. In addition, the Company will pay PGEN tiered royalties ranging from low-single digit to high-single digit on the net sales derived from the sales of any approved IL-12 Products and CAR Products. The Company will also pay PGEN royalties ranging from low-single digit to mid-single digit on the net sales derived from the sales of any approved TCR Products, up to a maximum royalty amount of $100.0 million in the aggregate. The Company will also pay PGEN 20% of any sublicensing income received by the Company relating to the licensed products.

The Company is responsible for all development costs associated with each of the licensed products.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

7. Settlement of a Related Party Relationship (Continued)

PGEN will pay the Company royalties ranging from low-single digits to mid-single digits on the net sales derived from the sale of PGEN's CAR products, up to $50.0 million.

During the years ended December 31, 2020, 2019 and 2018, there were no expenses for services performed by PGEN. As of December 31, 2020 and 2019, the Company had $0.1 million in accrued expenses for amounts due to PGEN.

In consideration of the Company entering into the License Agreement, Precigen forfeited and returned to the Company all shares of the Company's Series 1 preferred stock held by or payable to Precigen as of the date of the License Agreement. In addition, PGEN is required to transfer all of Ziopharm's rights and obligations under the Ares Trading Agreement to Precigen (or its' affiliate). As a result, Ziopharm shall not be responsible for any remaining obligations under the Merck Agreement. Additionally, Precigen forfeited and returned to the Company all shares of the Company's Series 1 preferred stock held by or payable to Precigen as of the date of the License Agreement.

The Company determined that this transaction represented a capital transaction between related parties. The Company fair valued the preferred stock and the derivative liability on the date of the transaction, noting a total fair value of $163.3 million. The relinquishment of the Ziopharm's obligation under the Ares Trading Agreement was also considered part of the overall capital transaction. The Company recognized an additional credit to accumulated deficit of $49.5 million as a result of the relief of the obligation under the Ares Trading Agreement (Note 7). The total amount of the settlement was $212.8 million.

The Company incurred approximately $7.4 million of transaction advisory costs with third-party vendors, of which $5.4 million was considered a direct cost associated with the Series 1 preferred stock extinguishment and is also included as part of the consideration transferred. The remaining $2.0 million of transaction costs were recognized as an expense during the year ended December 31, 2018.

The Company recognized a net credit to accumulated deficit of $207.3 million, calculated as the difference in the carrying value of the Series 1 preferred stock, derivative liability, and contract liability, and the consideration transferred of $5.4 million, in connection with the transaction. This amount is included in net income available to common shareholders in the calculation of earnings per share for the year ended December 31, 2018 (Note 3).

8. Leases

Operating Leases

The Company adopted FASB ASU No. 2016-02, *Leases (Topic 842)* on January 1, 2019 using the effective date method, in which it did not restate prior periods. Upon adoption, the Company elected the package of practical expedients permitted under the transition guidance within Topic 842 which, among other things, allowed it to carry forward the historical lease classification. The Company does not allocate consideration in its leases to lease and non-lease components and does not record leases on its balance sheets with terms of 12 months or less.

The Company uses its estimated incremental borrowing rate, which is derived from information available at the lease commencement date, in determining the present value of lease payments. The Company's incremental borrowing rate represents the rate of interest that it would have to pay to borrow over a similar term an amount equal to the lease payments in a similar economic environment. The Company considers publicly available data for instruments with similar terms and characteristics when determining its incremental borrowing rates.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

8. Leases (Continued)

The adoption of Topic 842 resulted in recognition of approximately $1.6 million of right-of-use assets and $1.6 million of lease liabilities on the Company's balance sheets on January 1, 2019. The adoption did not have a material impact on the Company's statements of operations or accumulated deficit. The Company will review the classification of newly entered leases as either an operating or a finance lease and recognize a related right-of-use asset and lease liabilities on its balance sheets upon commencement.

In June 2012, the Company entered into a master lease for the Company's corporate office headquarters in Boston, which was originally set to expire in August 2016, but renewed through August 31, 2021. As of December 31, 2020, and December 31, 2019, a total security deposit of $0.1 million is included in deposits on the Company's balance sheet. On January 30, 2018, the Company entered into a lease agreement for office space in Houston at MD Anderson. Under the terms of the Houston lease agreement, the Company leased approximately two hundred and ten square feet and were required to make rental payments at an average monthly rate of approximately $1 thousand. This lease was terminated effective March 31, 2020.

On March 12, 2019, the Company entered into a lease agreement for office space in Houston. Under the terms of the First Houston Lease agreement, the Company leases approximately 1,038 square feet and is required to make rental payments at an average monthly rate of approximately $2 thousand through April 2021. On October 15, 2019, the Company entered into a lease agreement for additional office space in Houston. Under the terms of the Second Houston Lease, the Company leases from MD Anderson, approximately 8,443 square feet and is initially required to make rental payments of approximately $17.0 thousand through February 2027, subject to an annual base rent increase of approximately 3.0% throughout the term. Effective April 13, 2020, the Company leased an additional 5,584 square feet from MD Anderson. The Company is initially required to make rental payments of approximately $12 thousand per month through February 2027, subject to an annual base rent increase of approximately 3.0% throughout the term. All future rent expense incurred in Houston, will be deducted from the Company's prepayments at MD Anderson. Effective June 1, 2020, the Company entered into a noncancelable lease for a period of less than a year with monthly payments of approximately $10 thousand. Effective September 1, 2020, the Company added additional space to the noncancelable lease for a period of less than a year with monthly payments now totaling approximately $15 thousand. Effective December 15, 2020, the Company leased approximately 35,482 square feet from MD Anderson. The Company is initially required to make rental payments of approximately $37 thousand per month through April 2028, subject to an annual base rent increase of approximately 3.0% throughout the term beginning in April 2023. All future rent expense incurred in Houston, will be deducted from the Company's prepayments at MD Anderson.

The components of lease expense were as follows:

	Years Ended December 31,	
	2020	2019
Operating lease cost	$ 1,054	$ 772
Total lease cost	$ 1,054	$ 772
Weighted-average remaining lease term (years)	6.19	4.42
Weighted-average discount rate	8.00%	8.00%

Cash paid for amounts included in the measurement of the lease liabilities were $1.0 million for the year-ended December 31, 2020. The Company recognized new operating lease assets obtained in exchange for operating lease liabilities of $3.2 million for the year-ended December 31, 2020.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

8. Leases (Continued)

As of December 31, 2020, the maturities of the Company's operating lease liabilities were as follows (in thousands):

Maturity of Lease Liabilities	Operating Leases
2021	$ 1,189
2022	800
2023	820
2024	844
2025	869
Thereafter	1,650
Total lease payments	$ 6,172
Less: imputed interest and adjustments	(1,358)
Present value of lease payments	$ 4,814

9. Commitments and Contingencies

License Agreements

Exclusive License Agreement with PGEN

On October 5, 2018, the Company entered into an exclusive license agreement with PGEN. Refer to Note 7 – *Settlement of a Related Party Relationship* for further details.

License Agreement and Research and Development Agreements —The University of Texas MD Anderson Cancer Center

On January 13, 2015, ZIOPHARM, together with Precigen, entered into the MD Anderson License with MD Anderson (which Precigen subsequently assigned to PGEN). Pursuant to the MD Anderson License, the Company, together with PGEN, holds an exclusive, worldwide license to certain technologies owned and licensed by MD Anderson including technologies relating to novel CAR T-cell therapies, non-viral gene transfer systems, genetic modification and/or propagation of immune cells and other cellular therapy approaches, Natural Killer, or NK Cells, and TCRs, arising from the laboratory of Laurence Cooper, M.D., Ph.D., who served as the Company's Chief Executive Officer from May 2015 to February 2021 and was formerly a tenured professor of pediatrics at MD Anderson.

The term of the MD Anderson License expires on the later of (a) the expiration of all patents licensed thereunder, or (b) the twentieth anniversary of the date of the MD Anderson License; provided, however, that following the expiration of the term of the MD Anderson License, the Company, together with PGEN, shall have a fully-paid up, royalty free, perpetual, irrevocable and sublicensable license to use the licensed intellectual property thereunder. After ten years from the date of the MD Anderson License and subject to a 90-day cure period, MD Anderson will have the right to convert the MD Anderson License into a non-exclusive license if ZIOPHARM and PGEN are not using commercially reasonable efforts to commercialize the licensed intellectual property on a case-by-case basis. After five years from the date of the MD Anderson License and subject to a 180-day cure period, MD Anderson will have the right to terminate the MD Anderson License with respect to specific technology(ies) funded by the government or subject to a third-party contract if the Company and PGEN are not meeting the diligence requirements in such funding agreement or contract, as applicable. MD Anderson may also terminate the agreement with written notice upon material breach by us and PGEN, if such breach has not been

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

9. Commitments and Contingencies (Continued)

cured within 60 days of receiving such notice. In addition, the MD Anderson License will terminate upon the occurrence of certain insolvency events for both the Company and PGEN and may be terminated by the mutual written agreement of the Company, PGEN, and MD Anderson.

On August 17, 2015, the Company, PGEN and MD Anderson entered into the Research and Development, or the 2015 Agreement, to formalize the scope and process for the transfer by MD Anderson, pursuant to the terms of the MD Anderson License, of certain existing research programs and related technology rights, as well as the terms and conditions for future collaborative research and development of new and ongoing research programs.

Pursuant to the 2015 Agreement, the Company, PGEN and MD Anderson have agreed to form a joint steering committee that will oversee and manage the new and ongoing research programs. Under the License Agreement with PGEN, ZIOPHARM and PGEN agreed that PGEN would no longer participate on the joint steering committee after the date of the License Agreement. As provided under the MD Anderson License, the Company provided funding for research and development activities in support of the research programs under the Research and Development Agreement for a period of three years and in an amount of no less than $15.0 million and no greater than $20.0 million per year. On October 22, 2019, the Company entered into an amendment to the Research and Development Agreement extending its term until December 31, 2026.

On October 22, 2019, the Company entered into the 2019 Research and Development Agreement, or the 2019 Agreement, with MD Anderson, pursuant to which the parties agreed to collaborate with respect to the Company's *Sleeping Beauty* immunotherapy program, which uses non-viral gene transfer to stably express and clinically evaluate neoantigen-specific TCRs in T cells. Under the 2019 Agreement, the parties will, among other things, collaborate on programs to expand the Company's TCR library and conduct clinical trials.

The Company will own all intellectual property developed under the 2019 Agreement and will retain all rights to intellectual property for oncology products manufactured using non-viral gene transfer technologies under the Agreement, including the Company's *Sleeping Beauty* technology. The Company has granted MD Anderson an exclusive license for such intellectual property outside the field of oncology and to develop and commercialize autologous TCR products manufactured using viral gene transfer technologies, and a non-exclusive license for allogeneic TCR products manufactured using viral-based technologies.

In connection with the execution of the 2019 Agreement, the Company issued MD Anderson a warrant to purchase 3,333,333 shares of common stock. Refer to Note 10 – *Warrants* for further details.

The Company has agreed, beginning on January 1, 2021, to reimburse MD Anderson up to a total of $20.0 million for development costs incurred starting after January 1, 2021 under the 2019 Agreement. In addition, the Company will pay MD Anderson royalties on net sales of its TCR products at rates in the low single digits. The Company is required to make performance-based payments upon the successful completion of clinical and regulatory benchmarks relating to its TCR products. The aggregate potential benchmark payments are $36.5 million, of which only $3.0 million will be due prior to the first marketing approval of the Company's TCR products. The royalty rates and benchmark payments owed to MD Anderson may be reduced upon the occurrence of certain events. The Company also agreed that it will sell the Company's TCR products to MD Anderson at preferential prices and will sell its TCR products in Texas exclusively to MD Anderson for a limited period of time following the first commercial sale of the Company's TCR products.

During the years ended December 31, 2020 and 2019, the Company made no payments to MD Anderson. The net balance of cash resources on hand at MD Anderson available to offset expenses and future costs is $8.1 million,

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

9. Commitments and Contingencies (Continued)

which is included in prepaid expenses and other current assets on the Company's balance sheet on December 31, 2020.

The term of the MD Anderson License expires on the last to occur of (a) the expiration of all patents licensed thereunder, or (b) the twentieth anniversary of the date of the MD Anderson License; provided, however, that following the expiration of the term of the MD Anderson License, the Company, together with PGEN, shall then have a fully-paid up, royalty free, perpetual, irrevocable and sublicensable license to use the licensed intellectual property thereunder. After ten years from the date of the MD Anderson License and subject to a 90-day cure period, MD Anderson will have the right to convert the MD Anderson License into a non-exclusive license if ZIOPHARM and PGEN are not using commercially reasonable efforts to commercialize the licensed intellectual property on a case-by-case basis. After five years from the date of the MD Anderson License and subject to a 180-day cure period, MD Anderson will have the right to terminate the MD Anderson License with respect to specific technology(ies) funded by the government or subject to a third-party contract if the Company and PGEN are not meeting the diligence requirements in such funding agreement or contract, as applicable. MD Anderson may also terminate the agreement with written notice upon material breach by us and PGEN, if such breach has not been cured within 60 days of receiving such notice. In addition, the MD Anderson License will terminate upon the occurrence of certain insolvency events for both us and PGEN and may be terminated by the mutual written agreement of us, PGEN, and MD Anderson.

License Agreement with the National Cancer Institute

On May 28, 2019, the Company entered into a patent license agreement, or the Patent License, with the National Cancer Institute, or the NCI. Pursuant to the Patent License, the Company holds an exclusive, worldwide license to certain intellectual property to develop and commercialize patient-derived (autologous), peripheral blood T-cell therapy products engineered by transposon-mediated gene transfer to express TCRs reactive to mutated KRAS, TP53 and EGFR. In addition, pursuant to the Patent License, the Company holds an exclusive, worldwide license to certain intellectual property for manufacturing technologies to develop and commercialize autologous, peripheral blood T-cell therapy products engineered by non-viral gene transfer to express TCRs, as well as a non-exclusive, worldwide license to certain additional manufacturing technologies.

Pursuant to the terms of the Patent License, the Company made payments of $0.5 and $1.0 million during the years ended December 31, 2020 and 2019, respectively. The terms of the Patent License also require the Company to pay the NCI minimum annual royalties in the amount of $0.3 million, which amount will be reduced to $0.1 million once the aggregate minimum annual royalties paid by the Company equals $1.5 million. The first minimum annual royalty payment was paid during the year ending December 31, 2020. On December 31, 2020 and 2019, the Company included $0.3 million related to the Patent License as prepaid expenses and other current assets on the Company's balance sheet. On December 31, 2020 and 2019, the Company included $0 and $0.5 million, respectively in accrued expenses on the Company's balance sheet.

On January 8, 2020, the Company entered into an amendment to the patent license agreement which expanded the TCR library to include additional TCR's reactive to mutated KRAS and TP53. Under the amendment, the Company paid $0.6 million during the year ending December 31, 2020.

On September 28, 2020, the Company entered into a second amendment to the patent license agreement which expanded the TCR library to include additional TCR's receptors. Under the second amendment, the Company paid $0.4 million for the year ended December 31, 2020.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

9. Commitments and Contingencies (Continued)

The Company is also required to make performance-based payments upon successful completion of clinical and regulatory benchmarks relating to the licensed products. The aggregate potential benchmark payments are $4.3 million, of which aggregate payments of $3.0 million are due only after marketing approval in the United States or in Europe, Japan, Australia, China or India. The first benchmark payment of $0.1 million will be due upon the initiation of the Company's first sponsored Phase 1 clinical trial of a licensed product or licensed process in the field of use licensed under the Patent License. There have been no payments as of December 31, 2020.

In addition, the Company is required to pay the NCI one-time benchmark payments following aggregate net sales of licensed products at certain net sales up to $1.0 billion. The aggregate potential amount of these benchmark payments is $12.0 million. The Company must also pay the NCI royalties on net sales of products covered by the Patent License at rates in the low to mid-single digits depending upon the technology included in a licensed product. To the extent the Company enters into a sublicensing agreement relating to a licensed product, the Company is required to pay the NCI a percentage of all consideration received from a sublicensee, which percentage will decrease based on the stage of development of the licensed product at the time of the sublicense.

The Patent License will expire upon expiration of the last patent contained in the licensed patent rights, unless terminated earlier. The NCI may terminate or modify the Patent License in the event of a material breach, including if the Company does not meet certain milestones by certain dates, or upon certain insolvency events that remain uncured following the date that is 90 days following written notice of such breach or insolvency event. The Company may terminate the Patent License, or any portion thereof, in the Company's sole discretion at any time upon 60 days' written notice to the NCI. In addition, the NCI has the right to: (i) require the Company to sublicense the rights to the product candidates covered by the Patent License upon certain conditions, including if the Company is not reasonably satisfying required health and safety needs and (ii) terminate or modify the Patent License, including if the Company is not satisfying requirements for public use as specified by federal regulations.

Cooperative Research and Development Agreement (CRADA) with the National Cancer Institute

On January 10, 2017, the Company announced the signing of the CRADA with the NCI for the development of adoptive cell transfer, or ACT,-based immunotherapies genetically modified using the *Sleeping Beauty* transposon/transposase system to express TCRs for the treatment of solid tumors. The principal goal of the CRADA is to develop and evaluate ACT for patients with advanced cancers using autologous peripheral blood lymphocytes, or PBL, genetically modified using the non-viral *Sleeping Beauty* system to express TCRs that recognize neoantigens expressed within a patient's cancer. Research conducted under the CRADA will be at the direction of Steven A. Rosenberg, M.D., Ph.D., Chief of the Surgery Branch at the NCI, in collaboration with the Company's researchers and PGEN researchers. During the year ended December 31, 2020 and 2019, the Company made payments of $2.5 million, each year. In February 2019, the Company extended the CRADA with the NCI for two years, committing an additional $5.0 million to this program.

Exclusive Channel Partner Agreement with PGEN for the Cancer Programs

From 2011 to 2018, the Company was party to various arrangements with Precigen (now PGEN) in which the Company used PGEN's technology to research and develop cancer treatments in return for various future profit sharing and royalty arrangements. These agreements were modified or terminated by the License Agreement described in Note 7.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

9. Commitments and Contingencies (Continued)

Ares Trading License and Collaboration Agreement

On March 27, 2015, the Company, together with Precigen (now PGEN), signed the Ares Trading Agreement, with Ares Trading S.A., a subsidiary of the biopharmaceutical business of Merck KGaA, Darmstadt, Germany, through which the parties established a collaboration for the research and development and commercialization of certain products for the prophylactic, therapeutic, palliative or diagnostic use for cancer in humans.

PGEN was entitled to receive $5.0 million from Ares Trading, payable in equal quarterly installments over two years for each identified product candidate, which will be used to fund discovery work. The Company was responsible for costs exceeding the quarterly installments and all other costs of the preclinical research and development. For the years ended December 31, 2020 and 2019, the Company incurred no expense under the Ares Trading Agreement. For the year ended December 31, 2018, the Company has expensed $0.1 million under the Ares Trading Agreement.

Ares Trading paid a non-refundable upfront fee of $115.0 million to Precigen as consideration for entry into the Ares Trading Agreement. Pursuant to the ECP Amendment, the Company was entitled to receive 50% of the upfront fee, or $57.5 million, which was received from Precigen in July 2015.

Under the License Agreement, PGEN agreed to perform all future obligations of the Company under the Ares Trading Agreement other than certain payment obligations. Accordingly, the Company recognized the remaining deferred revenue as part of the settlement of related party relationships as described in Note 7.

Patent and Technology License Agreement—The University of Texas MD Anderson Cancer Center and the Texas A&M University System

On August 24, 2004, the Company entered into a patent and technology license agreement with MD Anderson and the Texas A&M University System, which the Company refers to, collectively, as the Licensors. Under this agreement, were granted an exclusive, worldwide license to rights (including rights to U.S. and foreign patent and patent applications and related improvements and know-how) for the manufacture and commercialization of two classes of organic arsenicals (water- and lipid-based) for human and animal use. The class of water-based organic arsenicals includes darinaparsin.

The Company issued options to purchase 50,222 shares outside of its stock option plans following the successful completion of certain clinical milestones, of which all have vested.The Licensors are entitled to receive certain milestone payments. In addition, the Company may be required to make additional payments to the Licensors (as defined in the MD Anderson License) upon achievement of certain other milestones in varying amounts which, on a cumulative basis could total up to $4.5 million. In addition, the Licensors are entitled to receive single digit percentage royalty payments on sales from a licensed product and will also be entitled to receive a portion of any fees that the Company may receive from a possible sublicense under certain circumstances.

Collaboration Agreement with Solasia Pharma K.K.

On March 7, 2011, the Company entered into a License and Collaboration Agreement with Solasia which was amended on July 31, 2014 to include an exclusive worldwide license. Pursuant to the License and Collaboration Agreement, the Company granted Solasia an exclusive license to develop and commercialize darinaparsin in both intravenous and oral forms and related organic arsenic molecules, in all indications for human use

As consideration for the license, the Company is eligible to receive from Solasia development- and sales-based milestones, a royalty on net sales of darinaparsin, once commercialized, and a percentage of any sublicense

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

9. Commitments and Contingencies (Continued)

revenues generated by Solasia. Solasia will be responsible for all costs related to the development, manufacturing and commercialization of darinaparsin. The Company's Licensors, as defined in the agreement, will receive a portion of all milestone and royalty payments made by Solasia to the Company in accordance with the terms of the license agreement with the Licensors.

10. Warrants

In connection with the Company's November 2018 private placement which provided net proceeds of approximately $47.1 million, the Company issued warrants to purchase an aggregate of 18,939,394 shares of common stock which became exercisable six months after the closing of the private placement. The warrants have an exercise price of $3.01 per share and have a five-year term. The relative fair value of the warrants was estimated at $18.4 million using a Black-Scholes model with the following assumptions: expected volatility of 71%, risk free interest rate of 2.99%, expected life of five years and no dividends.

On July 26, 2019 and September 12, 2019, the Company entered into agreements with existing investors for the exercise of previously issued warrants to purchase common stock in a private placement. Pursuant to the terms of the agreements, investors exercised their 2018 warrants for an aggregate of 17,803,031 shares of common stock, at an exercise price of $3.01 per share. The warrants exercised were originally issued by the Company in a private placement that closed in November 2018. Proceeds from the warrant exercise, after deducting placement agent fees and other related expenses of $1.1 million were approximately $52.5 million. The Company issued participating investors new warrants to purchase up to 17,803,031 additional shares of common stock as an inducement for the warrant holders to exercise their 2018 warrants early. The 2019 warrants will become exercisable six months following the date of issuance, will expire on the fifth anniversary of the initial exercise date, and have an exercise price of $7.00. The 2019 warrants were valued using a Black-Scholes valuation model and resulted in a $60.8 million non-cash charge in the Company's statement of operations during the year ended December 31, 2019.

The Company assessed whether both the 2019 and 2018 warrants required accounting as derivatives. The Company determined that the warrants were (1) indexed to the Company's own stock and (2) classified in stockholders' equity in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 815, *Derivatives and Hedging*. As such, the Company has concluded the warrants meet the scope exception for determining whether the instruments require accounting as derivatives and should be classified in stockholders' equity.

On October 22, 2019, the Company entered into the 2019 Agreement with MD Anderson. In connection with the execution of the 2019 Agreement, the Company issued MD Anderson a warrant to purchase 3,333,333 shares of common stock. The warrant has an initial exercise price of $0.001 per share and grant date fair value of $14.5 million. The warrant expires on December 31, 2026 and vests upon the occurrence of certain clinical milestones. The Company will recognize expense on the warrant in the same manner as if the Company paid cash for services to be rendered. For the years ended December 31, 2020 and 2019, the Company did not recognize any expense related to the warrant as no work on the clinical milestones has begun.

11. Income Taxes

There is no provision for income taxes because the Company has incurred operating losses since inception. The reported amount of income tax expense for the years differs from the amount that would result from applying

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

11. Income Taxes (Continued)

domestic federal statutory tax rates to pretax losses primarily because of the changes in the valuation allowance. Significant components of the Company's deferred tax assets at December 31, 2020 and 2019 are as follows:

	December 31,	
(in thousands)	2020	2019
Deferred tax assets:		
Net operating loss carryforwards	$ 147,004	$ 124,115
Start-up and organizational costs	25,909	30,480
Research and development credit carryforwards	37,183	35,130
Stock compensation	1,478	1,087
Capitalized acquisition costs	3,691	4,501
Lease liability	1,225	626
Depreciation	71	176
Other	135	1,186
	216,696	197,301
Less valuation allowance	(215,513)	(196,696)
Total deferred tax assets	1,183	605
Deferred tax liabilities:		
Right of use asset	(1,183)	(605)
Total deferred tax liabilities	$ (1,183)	$ (605)
Net deferred taxes	$ —	$ —

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. At December 31, 2020, the Company has aggregate net operating loss carryforwards for federal tax purposes of approximately $562 million, of which $342 million is available to offset future federal taxable income to the extent permitted under the Internal Revenue Code, or IRC, expiring in varying amounts through 2037 and approximately $220 million can be carried forward indefinitely. The Company also has approximately $458 million of state net operating loss carryforwards available to offset future state taxable income, expiring at various dates through 2040. Additionally, the Company has approximately $37.0 million of research and development credits at December 31, 2020, expiring in varying amounts through 2040, which may be available to reduce future taxes.

Under the IRC Section 382, certain substantial changes in the Company's ownership may limit the amount of net operating loss carryforwards that can be utilized in any one year to offset future taxable income.

Section 382 of the IRC provides limits to which a corporation that has undergone a change in ownership (as defined) can utilize any net operating loss, or NOL, and general business tax credit carryforwards it may have. The Company commissioned an analysis to determine whether Section 382 could limit the use of its carryforwards in this manner. After completing the analysis, it was determined an ownership change had occurred in February 2007. As a result of this change, the Company's NOL's and general business tax credits from February 23, 2007 and prior would be completely limited under IRC Section 382. The deferred tax assets related to NOL's and general business credits have been reduced by $11.2 million and $636 thousand, respectively, as a result of the change. The Company updated the IRC Section 382 analysis through December 31, 2018. There was no change in ownership at this time.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

11. Income Taxes (Continued)

The Company has provided a valuation allowance for the full amount of these net deferred tax assets, since it is more likely than not that these future benefits will not be realized. However, these deferred tax assets may be available to offset future income tax liabilities and expenses. The valuation allowance increased by $18.8 million in 2020 primarily due to net operating loss carryforwards and the increase in research and development credits.

Income taxes using the federal statutory income tax rate differ from the Company's effective tax rate primarily due to non-deductible expenses related to the Company's issuance of preferred stock along with the change in the valuation allowance on deferred tax assets.

A reconciliation of income tax expense (benefit) at the statutory federal income tax rate and income taxes as reflected in the financial statements is as follows:

	Year Ended December 31,		
(in thousands)	2020	2019	2018
Federal income tax at statutory rates	21%	21%	21%
State income tax, net of federal tax benefit	3%	3%	4%
Non-cash inducement warrant expense	0%	-11%	0%
Research and development credits	3%	1%	2%
Stock compensation	-1%	0%	-1%
Research and development true-up	0%	0%	0%
Officers compensation	0%	0%	-1%
Other	0%	-1%	-2%
Federal rate change	-2%	0%	3%
Change in valuation allowance	-24%	-13%	-26%
Effective tax rate	0%	0%	0%

The Company adopted ASC740, "Accounting for Uncertain Tax Positions" on January 1, 2007. ASC 740 clarifies the accounting for uncertainty in income taxes recognized in an enterprise's financial statements in accordance with FASB Statement No. 109, "Accounting for Income Taxes." ASC 740 prescribes a recognition threshold and measurement of a tax position taken or expected to be taken in a tax return. The Company did not establish any additional reserves for uncertain tax liabilities upon adoption of ASC 740. There were no adjustments to its uncertain tax positions in the years ended December 31, 2020, 2019, and 2018.

The Company has not recognized any interest and penalties in the statement of operations because of the Company's net operating losses and tax credits that are available to be carried forward. When necessary, the Company will account for interest and penalties related to uncertain tax positions as part of its provision for federal and state income taxes. The Company does not expect the amounts of unrecognized benefits will change significantly within the next twelve months.

The Company is currently open to audit under the statute of limitations by the Internal Revenue Service and state jurisdictions for the years ended December 31, 1999 through 2020.

On March 27, 2020, the United States enacted the Coronavirus Aid, Relief, and Economic Security ("CARES") Act into law which was an emergency economic stimulus package in response to the COVID-19 pandemic and its impact on the economy, public health, state and local governments, individuals and businesses. The Company has considered the legislation surrounding the impact of the CARES Act and the potential effects it may have on

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

11. Income Taxes (Continued)

the Company. Some of the more significant provisions under the CARES Act include five-year carryback of net operating losses (Section 2303), Refundable AMT credit (Section 2305), relaxation of the limitation of adjusted taxable income (ATI) as determined under IRC Section 163(j) from 30% to 50% (Section 2306), and changes to qualified bonus improvement property (QIP) tax life and bonus depreciation eligibility allowing for a 15-year tax useful life an eligibility for 100%b bonus depreciation (Section 2307). Due to the Company's history of US taxable losses, and use of MACRS and/or straight-line depreciation for tax purposes, there is no impact to the tax provision as a result of the enactment of the CARES Act. As of December 31, 2020, the Company has analyzed the provisions of the CARES Act and has recorded no income tax benefit or expense related to it.

12. Preferred Stock and Stockholders' Equity (Deficit)

On April 26, 2006, the date of the Company's annual stockholders meeting that year, the shareholders approved the adoption of an Amended and Restated Certificate of Incorporation pursuant to which the Company has 280,000,000 shares of authorized capital stock, of which 250,000,000 shares are designated as common stock (par value $0.001 per share), and 30,000,000 shares are designated as preferred stock (par value $0.001 per share).

Common Stock

The Company's amended and restated certificate of incorporation authorizes it to issue 250,000,000 shares of common stock. As of February 24, 2021, there were 214,667,023 shares of common stock outstanding and an additional 31,115,329 shares of common stock reserved for issuance pursuant to outstanding stock options and warrants. Though the Company has no immediate plans to issue additional shares of common stock, other than in connection with its 2020 Equity Incentive Plan, it may need additional shares for business and financial purposes in the future.

February 2020 Public Offering

On February 5, 2020, the Company entered into an underwriting agreement with Jefferies, as representative of the several underwriters named therein, relating to the issuance and sale of 27,826,086 shares of its common stock. The price to the public in the offering was $3.25 per share, and the underwriters agreed to purchase the shares from the Company pursuant to the underwriting agreement at a purchase price of $3.055 per share. Under the terms of the underwriting agreement, the Company also granted the underwriters an option, exercisable for 30 days, to purchase up to an additional 4,173,912 shares of common stock at a purchase price of $3.055 per share. The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File No. 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The underwriters purchased the 27,826,086 shares on February 5, 2020. The net proceeds from the offering were approximately $84.8 million after deducting underwriting discounts and offering expenses paid by the Company. On March 10, 2020, the underwriters exercised their option to purchase an additional 1,284,025 shares. The net proceeds were approximately $3.9 million after deducting underwriting discounts and offering expenses paid by the Company.

At-the-Market Offering

During the year ended December 31, 2020, the Company sold an aggregate of 2,814,673 shares of common stock. The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $13.0 million after deducting underwriting discounts and offering expenses payable by the Company.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

12. Preferred Stock and Stockholders' Equity (Deficit) (Continued)

During the year ended December 31, 2019, the Company sold an aggregate of 1,271,274 shares of common stock. The offering was made pursuant to the Company's effective registration statement on Form S-3ASR (File 333-232283) previously filed with the SEC, and a prospectus supplement thereunder. The net proceeds from the offering were approximately $6.1 million after deducting underwriting discounts and offering expenses payable by the Company.

November 2018 Private Placement and 2019 Inducement Warrants

On November 11, 2018, the Company entered into a securities purchase agreement with certain institutional and accredited investors, pursuant to which the Company agreed to issue and sell to the Investors an aggregate of 18,939,394 immediately separable units, with each unit being composed of (i) one share of the Company's common stock, par value $0.001 per share, and (ii) a warrant to purchase one share of common stock, at a price per unit of $2.64, for net proceeds of approximately $47.1 million (Note 10).

Preferred Stock

The Company's Board of Directors are authorized to designate any series of Preferred Stock, to fix and determine the variations in relative rights, preferences, privileges and restrictions as between and among such series.

On June 29, 2016, the Company entered into amendments to certain agreements with Precigen (now PGEN) (Note 7). In consideration for the execution and delivery of these amendments, the Company issued to Precigen 100,000 shares of its newly designated Series 1 preferred stock. Each share of the Company's Series 1 preferred stock had a stated value of $1,200, subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other recapitalization. The Series 1 preferred stock had certain rights, preferences, privileges and obligations, including dividend rights, conversion rights, consent rights with respect to certain Company actions, and rights to preferential payments in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company or a change of control or sale, lease, transfer or exclusive license of all or substantially all of the Company's assets prior to the conversion of the Series 1 preferred stock.

On October 5, 2018, the Company and PGEN entered into the License Agreement to replace all existing agreements between the companies, which provides the Company with certain exclusive and non-exclusive rights to technology controlled by PGEN. In consideration of the Company entering into the License Agreement, Precigen forfeited and returned to the Company all shares of the Company's Series 1 preferred stock held by or payable to Precigen as of the date of the License Agreement (Notes 7 and 9).

13. Derivative Financial Instruments

The Company determined that certain embedded features related to the Series 1 preferred stock were derivative financial instruments. The company values the embedded derivative financial instruments related to the Series 1 preferred stock as Level 3 financial liabilities (Note 3).

On October 5, 2018, the Company entered into the License Agreement with PGEN. In partial consideration for the termination of the former agreements, the Company and PGEN agreed that Precigen would forfeit all outstanding shares of the Series 1 preferred stock held by Precigen, including any accrued dividends and related financial instruments. Thus, upon closing of the transaction, these derivative financial instruments were no longer outstanding (Note 7).

ZIOPHARM Oncology, Inc.
NOTES TO FINANCIAL STATEMENTS

13. Derivative Financial Instruments (Continued)

The change in the derivative liability for the years ended December 31, 2020, 2019, and 2018 consists of the following:

	Fair Value
Balance, December 31, 2017	$ 2,424
Dividends	223
Change in fair value	(158)
Settlement of a related party relationship	(2,489)
Balance, December 31, 2018	$ —
Dividends	—
Change in fair value	—
Balance, December 31, 2019	$ —
Dividends	—
Change in fair value	—
Balance, December 31, 2020	$ —

The fair value of the Series 1 preferred stock dividends was estimated using a probability-weighted approach and a Monte Carlo simulation model. The fair value of the embedded derivatives was estimated using the "with" and "without" method where the preferred stock was first valued with all of its features ("with" scenario) and then without derivatives subject to the valuation analysis ("without" scenario). The fair value of the derivatives was then estimated as the difference between the fair value of the preferred stock in the "with" scenario and the preferred stock in the "without" scenario. The model also takes into account, management estimates of clinical success/failure based upon market studies and probability of potential conversion and liquidation events. If these estimates were different, the valuations would change, and that change could be material. Inputs to the models included the following:

	December 31, 2018
Risk-free interest rate	2.50 - 3.13%
Expected dividend rate	0
Expected volatility	77.6 - 82.4%
Preferred stock conversion limit - percentage of outstanding common stock	19.90%
Preferred conversion floor price	$ 1.00

14. Stock Option Plan

The Company adopted the 2012 Equity Incentive Plan, or the "2012 Plan," in May 2012. Including subsequent increases, the Company had reserved 14 million shares for issuance. On December 31, 2020, there are 5,659,018 shares reserved for issuance and no shares available for future grant.

The Company adopted the 2020 Equity Incentive Plan, or the "2020 Plan," in June 2020. The Company reserved 21 million shares for issuance plus a carryover of 1,066,275 shares from the 2012 Plan for a total of 22,066,275 shares. However, only 5,750,000 shares were registered due to due to the proximity to the Company's authorized limit of 250 million shares. On December 31, 2020, there are 1,173,368 shares reserved for issuance and 5,714,648 shares available for future grant.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

14. Stock Option Plan (Continued)

As of December 31, 2020 the Company had outstanding options to its employees to purchase up to 5,733,1551 shares of the Company's common stock, to its directors to purchase up to 1,039,231 shares of the Company's common stock, as well as options to consultants in connection with services rendered to purchase up to 60,000 shares of the Company's common stock.

Stock options to employees generally vest ratably in either quarterly or annual installments over three or four years, commencing on the first anniversary of the grant date and have contractual terms of ten years. Stock options to directors generally vest ratably over one or two years and have contractual terms of ten years. Stock options are valued using the Black-Scholes option pricing model and compensation is recognized based on such fair value over the period of vesting on a straight-line basis.

Proceeds from the option exercises during the years ended December 31, 2020, 2019, and 2018 amounted to $0.4 million, $1.2 million and $0.2 million respectively. The intrinsic value of these options amounted to $0.3 million, $1.1 million and $0.1 million for years ended December 31, 2020, 2019 and 2018, respectively.

Transactions under the 2012 Plan and the 2020 Plan for the years ending December 31, 2020, 2019, and 2018 were as follows:

(in thousands, except share and per share data)	Number of Shares	Weighted-Average Exercise Price	Weighted-Average Contractual Term (Years)	Aggregate Intrinsic Value
Outstanding, December 31, 2017	3,852,135	$ 5.12		
Granted	1,744,950	2.35		
Exercised	(104,167)	2.35		
Cancelled	(215,833)	5.72		
Outstanding, December 31, 2018	5,277,085	4.24		
Granted	2,880,691	3.40		
Exercised	(581,105)	3.30		
Cancelled	(1,733,792)	4.21		
Outstanding, December 31, 2019	5,842,879	3.21		
Granted	2,222,368	3.39		
Exercised	(338,333)	2.01		
Cancelled	(894,528)	4.22		
Outstanding, December 31, 2020	6,832,386	$ 3.81	7.94	$ 812
Options exercisable, December 31, 2020	3,596,315	$ 4.17	6.90	$ 598
Options exercisable, December 31, 2019	2,765,357	$ 4.39	6.70	$ 3,603
Options available for future grant at December 31, 2020	5,714,648			

In September 2017, the Company granted an option for 500,000 inducement stock options, with an exercise price of $6.16 per share, which vests ratably in annual installments over three years, commencing on the first anniversary of the grant date and has a contractual term of ten years. The grant date fair value was $2.2 million.

On July 22, 2019, August 19, 2019, and November 21, 2019, the Company granted 400,000, 65,000, and 65,000 inducement stock options, with exercise prices of $5.60, $5.18, and $4.59, respectively. The options vest ratably,

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

14. Stock Option Plan (Continued)

over four years, commencing with one quarter on the first anniversary of the grant date and then quarterly thereafter. The options have a contractual term of ten years. These options were granted outside of the 2012 Plan and therefore, are not included in the table above. The grant date fair value was $1.5 million, $231 thousand, and $193 thousand, respectively. As of December 31, 2020, 588,333 options are outstanding from all inducement stock options.

On December 31, 2020, total unrecognized compensation costs related to non-vested stock options outstanding amounted to $7.3 million. The cost is expected to be recognized over a weighted-average period of 1.78 years.

Restricted Stock

In the fiscal years ended December 31, 2020 and 2019, the Company issued 805,900 and 1,519,766 shares of restricted stock, respectively, to employees. and directors.

In January 2019, one of the Company's executives received 446,428 shares of restricted stock in lieu of their annual cash bonus. The shares were immediately vested.

In the year ended December 31, 2019, the Company repurchased 225,339 shares at average prices ranging from $2.24 to 4.72 to cover payroll taxes. In the year ended December 31, 2018, the Company repurchased 514,349 shares at average prices ranging from $1.70 to 4.41 to cover payroll taxes.

A summary of the status of restricted stock as of December 31, 2020, 2019 and 2018 is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value
Non-vested, December 31, 2017	1,808,559	$ 5.74
Granted	150,321	1.87
Vested	(1,005,337)	6.62
Cancelled	(271,433)	5.00
Non-vested, December 31, 2018	682,110	3.47
Granted	1,519,766	2.44
Vested	(1,187,601)	2.82
Cancelled	(74,599)	3.41
Non-vested, December 31, 2019	939,676	2.93
Granted	805,900	3.75
Vested	(764,360)	3.51
Cancelled	(194,897)	3.44
Non-vested, December 31, 2020	786,319	$ 3.08

As of December 31, 2020, there was $1.8 million of total unrecognized stock-based compensation expense related to non-vested restricted stock arrangements. The expense is expected to be recognized over a weighted-average period of 1.34 years.

15. Employee Benefit Plan

The Company sponsors a qualified 401(k) retirement plan under which employees are allowed to contribute certain percentages of their pay, up to the maximum allowed under Section 401(k) of the IIRC. The Company

ZIOPHARM Oncology, Inc.
NOTES TO FINANCIAL STATEMENTS

15. Employee Benefit Plan (Continued)

may make contributions to this plan at its discretion. The Company contributed approximately $538 thousand, $404 thousand, and $329 thousand to this plan during the years ended December 31, 2020, 2019, and 2018, respectively.

16. Joint Venture

On December 18, 2018, the Company entered into a Framework Agreement with TriArm Therapeutics, Ltd., or TriArm, whereby the parties will launch Eden BioCell, Ltd., or Eden BioCell, to lead clinical development and commercialization of certain Sleeping Beauty-generated CAR-T therapies as set forth in a separate license agreement.

On January 3, 2019, Eden BioCell was incorporated in Hong Kong as a private company. Eden BioCell, the Company and TriArm entered into a Share Subscription Agreement on January 23, 2019, where the Company and TriArm agreed to contribute certain intellectual property, services and cash (only with respect to TriArm) to Eden BioCell to subscribe for a certain number of newly issued ordinary shares in the share capital of Eden BioCell. On the closing date, upon the issuance and subscription of the shares, in respect of the aforementioned consideration, 10,000,000 ordinary shares were issued to the Company and 10,000,000 ordinary shares were issued to TriArm.

The closing of the transaction occurred on July 5, 2019. The Framework Agreement and Share Subscription Agreements were each respectively amended to be effective as of this date. Upon consummation of the joint venture, Eden BioCell and the Company also entered into a license agreement, pursuant to which the Company licensed the rights to Eden BioCell for third-generation *Sleeping Beauty*-generated CAR-T therapies targeting the CD19 antigen for the territory of China (including Macau and Hong Kong), Taiwan and Korea. Eden BioCell will be responsible for certain milestone and royalty payments to related to the Company's license agreements with MD Anderson and PGEN, Inc. (Note 7). TriArm entered into a Master Services Agreement with Eden BioCell and contributed $10.0 million of cash on the closing date. TriArm also committed to contribute an additional $25.0 million to Eden BioCell over time through the achievement of specified milestones. TriArm and the Company each received a 50% equity interest in the joint venture in exchange for their contributions to Eden BioCell.

As of July 5, 2019, as a result of the design and purpose of Eden BioCell, the Company determined that Eden BioCell was considered a variable interest entity, or VIE, and concluded that it is not the primary beneficiary of the VIE as it did not have the power to direct the activities of the VIE that most significantly impact its performance. Rather, the Company accounts for the equity interest in Eden BioCell under the equity method of accounting as it has the ability to exercise significant influence over the operations of Eden BioCell.

The Company determined that Eden BioCell was not a customer and therefore, accounted for the transaction as the transfer of nonfinancial assets to be recognized at their fair value on the contribution date. The fair value of the intellectual property contributed to Eden BioCell had a de minimis value due to the early stage of the technology and the likelihood of clinical success. Due to the de minimis fair value of the intellectual property contributed, the Company did not record a gain or loss on this transaction and recognized a value of $0 for the equity-method investment.

For the year ended December 31, 2020, Eden Biocell incurred a net loss and the Company continues to have no commitment to fund its operations.

ZIOPHARM Oncology, Inc.

NOTES TO FINANCIAL STATEMENTS

17. Selected Quarterly Information (Unaudited)
(in thousands, except per share amounts)

Year Ended December 31, 2020	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue	$ —	$ —	$ —	$ —
Total operating expenses	18,660	18,606	20,321	22,774
Loss from operations	(18,660)	(18,606)	(20,321)	(22,774)
Net income (loss) applicable to common shareholders	(18,293)	(18,596)	(20,315)	(22,772)
Net income (loss) per share, basic	$ (0.09)	$ (0.09)	$ (0.10)	$ (0.11)
Net income (loss) per share, diluted	$ (0.09)	$ (0.09)	$ (0.10)	$ (0.11)

Year Ended December 31, 2019	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Revenue	$ —	$ —	$ —	$ —
Total operating expenses	13,621	14,753	13,448	16,036
Loss from operations	(13,621)	(14,753)	(13,448)	(16,036)
Non-cash inducement warrant expense	—	—	(60,751)	—
Net income (loss) applicable to common shareholders	(13,434)	(14,620)	(73,996)	(15,746)
Net income (loss) per share, basic	$ (0.08)	$ (0.09)	$ (0.43)	$ (0.09)
Net income (loss) per share, diluted	$ (0.08)	$ (0.09)	$ (0.43)	$ (0.09)

ZIOPHARM ONCOLOGY, INC.
2020 EQUITY INCENTIVE PLAN

FORM OF RESTRICTED STOCK AGREEMENT

Pursuant to the Restricted Stock Grant Notice ("***Grant Notice***") and this Restricted Stock Agreement (collectively, the "***Award***") and [in consideration of your past services], ZIOPHARM Oncology, Inc. (the "***Company***") has granted you a Restricted Stock Award under its 2020 Equity Incentive Plan (the "***Plan***") for the number of shares of Common Stock subject to the Award as indicated in the Grant Notice. Capitalized terms not explicitly defined in this Restricted Stock Agreement but defined in the Grant Notice or the Plan shall have the meanings set forth in the Grant Notice or Plan, as applicable. The terms of your Restricted Stock Award as specified in the Grant Notice and this Restricted Stock Agreement, including attachments thereto, constitute your Award Agreement.

The general terms and conditions applicable to your Award are as follows:

1. GOVERNING PLAN DOCUMENT. Your Award is subject to all the provisions of the Plan, including but not limited to the provisions in:

(a) Section 6 regarding the impact of a Capitalization Adjustment, dissolution, liquidation, or Corporate Transaction on your Award;

(b) Section 9(f) regarding the Company's retained rights to terminate your Continuous Service notwithstanding the grant of the Award; and

(c) Section 8(c) regarding the tax consequences of your Award.

Your Award is further subject to all interpretations, amendments, rules and regulations, which may from time to time be promulgated and adopted pursuant to the Plan. In the event of any conflict between the Award Agreement and the provisions of the Plan, the provisions of the Plan shall control.

2. VESTING. Subject to the limitations contained herein, your Award will vest as provided in the Grant Notice, provided that vesting will cease upon the termination of your Continuous Service.

3. DIVIDENDS. You may become entitled to receive payments equal to any cash dividends and other distributions paid with respect to a corresponding number of shares of Common Stock covered by your Award. Any such dividends or distributions shall be subject to the same forfeiture restrictions (including the Reacquisition Right defined in Section 5 below) and restrictions on transferability as apply to the shares covered by your Award with respect to which the dividends or other distributions relate and accordingly, shall be paid at the same time that the corresponding shares are released from the Reacquisition Right or other restriction in respect of your vested Award. To the extent any such dividends or distributions are paid in shares of Common Stock, then you will automatically be granted a corresponding number of

additional shares of Common Stock subject to the Award (the "***Dividend Shares***"), and further provided that such Dividend Shares shall be subject to the same forfeiture restrictions and restrictions on transferability, and same timing requirements for release of such restrictions/vesting, as apply to the shares subject to the Award with respect to which the Dividend Shares relate.

4. SECURITIES LAW COMPLIANCE. You may not be issued any shares under your Award unless the shares are either (i) then registered under the Securities Act or (ii) the Company has determined that such issuance would be exempt from the registration requirements of the Securities Act. Your Award must also comply with other applicable laws and regulations governing the Award, and you will not receive such shares if the Company determines that such receipt would not be in material compliance with such laws and regulations.

5. RIGHT OF REACQUISITION.

(a) To the extent provided in the Company's bylaws, as amended from time to time, the Company shall have the right to reacquire all or any part of the shares received pursuant to your Award (a "***Reacquisition Right***").

(b) To the extent a Reacquisition Right is not provided in the Company's bylaws, as amended from time to time, the Company shall have a Reacquisition Right as to the shares you received pursuant to your Award that have not as yet vested in accordance with the Vesting Schedule on the Grant Notice ("***Unvested Shares***") on the following terms and conditions:

(i) The Company, shall simultaneously with termination of your Continuous Service automatically reacquire for no consideration all of the Unvested Shares, unless the Company agrees to waive its Reacquisition Right as to some or all of the Unvested Shares. Any such waiver shall be exercised by the Company by written notice to you or your representative (with a copy to the Escrow Holder as defined below) within ninety (90) days after the termination of your Continuous Service, and the Escrow Holder may then release to you the number of Unvested Shares not being reacquired by the Company. If the Company does not waive its Reacquisition Right as to all of the Unvested Shares, then upon such termination of your Continuous Service, the Escrow Holder shall transfer to the Company the number of shares the Company is reacquiring.

(ii) The Company shall have the right to reacquire the Unvested Shares upon termination of your Continuous Service for no monetary consideration (that is, for $0.00).

(iii) The shares issued under your Award shall be held in escrow pursuant to the terms of the Joint Escrow Instructions attached to the Grant Notice as Attachment IV. You agree to execute two (2) Assignment Separate From Certificate forms (with date and number of shares blank) substantially in the form attached to the Grant Notice as Attachment III and deliver the same, along with the certificate or certificates evidencing the shares, for use by the escrow agent pursuant to the terms of the Joint Escrow Instructions.

(iv) Subject to the provisions of your Award, you shall, during the term of your Award, exercise all rights and privileges of a stockholder of the Company with respect to the shares deposited in escrow. You shall be deemed to be the holder of the shares for purposes of receiving any dividends which may be paid with respect to such shares and for purposes of exercising any voting rights relating to such shares; *provided that* any dividends payable with respect to shares that have not yet vested and been released from the Company's Reacquisition Right shall immediately be subject to the Reacquisition Right with the same force and effect as the shares subject to this Reacquisition Right immediately before such event.

(v) If, from time to time, there is any stock dividend, stock split or other change in the character or amount of any of the outstanding stock of the corporation, the stock of which is subject to the provisions of your Award, then in such event any and all new, substituted or additional securities to which you are entitled by reason of your ownership of the shares acquired under your Award shall, to the extent they relate to Unvested Shares, be immediately subject to the Reacquisition Right with the same force and effect as the Unvested Shares subject to this Reacquisition Right immediately before such event.

(vi) In addition to any other limitation on transfer created by applicable securities laws, you shall not sell, assign, hypothecate, donate, encumber, or otherwise dispose of any interest in the Common Stock while such shares of Common Stock are subject to the Reacquisition Right or continue to be held in the Joint Escrow.

6. RESTRICTIVE LEGENDS. The shares issued under your Award shall be endorsed with appropriate legends determined by the Company.

7. AWARD NOT A SERVICE CONTRACT. Your Award is not an employment or service contract, and nothing in your Award shall be deemed to create in any way whatsoever any obligation on your part to continue in the employ of the Company or an Affiliate, or on the part of the Company or an Affiliate to continue your employment. In addition, nothing in your Award shall obligate the Company or an Affiliate, their respective stockholders, boards of directors, Officers or Employees to continue any relationship that you might have as a Director or Consultant for the Company or an Affiliate.

8. WITHHOLDING OBLIGATIONS.

(a) At the time your Award is made, or at any time thereafter as requested by the Company and as further provided in Section 8 of the Plan, you hereby authorize withholding from payroll and any other amounts payable to you, and otherwise agree to make adequate provision for any sums required to satisfy the federal, state, local and foreign tax withholding obligations of the Company or an Affiliate, if any, which arise in connection with your Award (the "***Withholding Obligation***") in accordance with the withholding procedures established by the Company.

(b) Unless the Withholding Obligation is satisfied, the Company shall have no obligation to issue a certificate for such shares or release such shares from any escrow provided for herein. In the event the Withholding Obligation of the Company arises prior to the issuance of a certificate or release of shares from any escrow provided for herein, or it is determined after the issuance of a certificate to you or after the release of shares from any escrow to you that the amount of the Withholding Obligation was greater than the amount withheld by the Company, you agree to indemnify and hold the Company harmless from any failure by the Company to withhold the proper amount.

9. TAX CONSEQUENCES.

(a) You agree to review with your own tax advisors the federal, state, local and foreign tax consequences of this investment and the transactions contemplated by this Award. You will rely solely on such advisors and not on any statements or representations of the Company or any of its agents. You understand that you (and not the Company) will be responsible for your own tax liability that may arise as a result of this investment or the transactions contemplated by this Award. You understand that under Code Section 83, the excess of the fair market value of the shares subject to the Award on the date any forfeiture restrictions applicable to such shares lapse over any amount paid for such shares will be reportable as ordinary income on the lapse date. For this purpose, the term ***"forfeiture restrictions"*** includes the right of the Company to reacquire the Unvested Shares pursuant to the Reacquisition Right. You may elect under Code Section 83(b) to be taxed at the time the shares subject to the Award are issued, rather than when and as such shares cease to be subject to such forfeiture restrictions. THE FORM FOR MAKING THIS ELECTION MAY BE OBTAINED FROM THE COMPANY UPON YOUR REQUEST. YOU UNDERSTAND THAT FAILURE TO MAKE THIS FILING WITHIN THE APPLICABLE THIRTY (30)-DAY PERIOD WILL RESULT IN THE RECOGNITION OF ORDINARY INCOME AS THE FORFEITURE RESTRICTIONS LAPSE.

(b) FILING RESPONSIBILITY. YOU ACKNOWLEDGE THAT IT IS YOUR SOLE RESPONSIBILITY, AND NOT THE COMPANY'S, TO FILE A TIMELY ELECTION UNDER CODE SECTION 83(b), EVEN IF YOU REQUEST THE COMPANY OR ITS REPRESENTATIVES TO MAKE THIS FILING ON YOUR BEHALF.

(c) As a condition to accepting the Award, you hereby (a) agree to not make any claim against the Company, or any of its Officers, Directors, Employees or Affiliates related to tax liabilities arising from the Award or other Company compensation and (b) acknowledge that you were advised to consult with your own personal tax, financial and other legal advisors regarding the tax consequences of the Award and have either done so or knowingly and voluntarily declined to do so.

10. NOTICES. Any notices provided for in your Award or the Plan shall be given in writing and shall be deemed effectively given upon the earlier of (i) the date of personal delivery, including delivery by express courier, or delivery via electronic means, or (ii) the date that is five (5) days after deposit in the United States Post Office (whether or not actually received by the addressee), by registered or certified mail with postage and fees prepaid, addressed to the Company at its primary executive offices, attention: Stock Plan Administrator, and addressed to you at your address as on file with the Company at the time notice is given.

11. TRANSFERABILITY. Except as otherwise provided in the Plan, your Award is not transferable, except by will or by the applicable laws of descent and distribution.

12. SEVERABILITY. If any part of this Award Agreement or the Plan is declared by any court or governmental authority to be unlawful or invalid, such unlawfulness or invalidity will not invalidate any portion of this Award Agreement or the Plan not declared to be unlawful or invalid. Any Section of this Award Agreement (or part of such a Section) so declared to be unlawful or invalid will, if possible, be construed in a manner which will give effect to the terms of such Section or part of a Section to the fullest extent possible while remaining lawful and valid.

13. OTHER DOCUMENTS. You hereby acknowledge receipt of or the right to receive a document providing the information required by Rule 428(b)(1) promulgated under the Securities Act, which includes the Prospectus. In addition, you acknowledge receipt of the Company's Trading Policy.

14. MISCELLANEOUS.

(a) You agree upon request to execute any further documents or instruments necessary or desirable in the sole determination of the Company to carry out the purposes or intent of your Award.

(b) You acknowledge and agree that you have reviewed your Award in its entirety, have had an opportunity to obtain the advice of counsel prior to executing and accepting your Award and fully understand all provisions of your Award.

(c) If you have questions regarding these or any other terms and conditions applicable to your Award, including a summary of the applicable federal income tax consequences please see the Prospectus.

ASSIGNMENT SEPARATE FROM CERTIFICATE

FOR VALUE RECEIVED and pursuant to that certain Restricted Stock Grant Notice and Restricted Stock Agreement (the "***Award***"), _____ hereby sells, assigns and transfers unto ZIOPHARM Oncology, Inc., a Delaware corporation ("***Assignee***") _____ (___) shares of the common stock of the Assignee, standing in the undersigned's name on the books of said corporation represented by Certificate No. _____ herewith and do hereby irrevocably constitute and appoint _____ as attorney-in-fact to transfer the said stock on the books of the within named Company with full power of substitution in the premises. This Assignment may be used only in accordance with and subject to the terms and conditions of the Award, in connection with the reacquisition of shares of Common Stock of the Company issued to the undersigned pursuant to the Award, and only to the extent that such shares remain subject to the Company's Reacquisition Right under the Award.

Dated: _____

Signature: _____

_____
(Print Name), Recipient

[INSTRUCTION: Please do not fill in any blanks other than the signature line. The purpose of this Assignment is to enable the Company to exercise its Reacquisition Right set forth in the Award without requiring additional signatures on your part.**]**

Joint Escrow Instructions

[Date]

Secretary
ZIOPHARM Oncology, Inc.
One First Avenue
Parris Building 34, Navy Yard Plaza
Boston, MA 02129

Dear Sir/Madam:

As Escrow Agent for both ZIOPHARM Oncology, Inc., a Delaware corporation (the "***Company***"), and the undersigned recipient of stock of the Company ("***Recipient***"), you are hereby authorized and directed to hold the documents delivered to you pursuant to the terms of that certain Restricted Stock Grant Notice (including all attachments and exhibits thereto) dated _____ (the "***Grant Documents***"), to which a copy of these Joint Escrow Instructions is attached as Attachment IV, in accordance with the following instructions. Capitalized terms not explicitly defined in these instructions but defined in the Company's 2020 Equity Incentive Plan ("***Plan***") or the Grant Documents shall have the same definitions as provided therein.

1. In the event Recipient ceases to render services to the Company or an affiliate of the Company during the vesting period set forth in the Grant Documents, the Company or its assignee will give to Recipient and you a written notice specifying that the shares of stock shall be transferred to the Company. Recipient and the Company hereby irrevocably authorize and direct you to close the transaction contemplated by such notice in accordance with the terms of said notice.

2. At the closing you are directed (a) to date any stock assignments necessary for the transfer in question, (b) to fill in the number of shares being transferred, and (c) to deliver same, together with the certificate evidencing the shares of stock to be transferred, to the Company.

3. Recipient irrevocably authorizes the Company to deposit with you any certificates evidencing shares of stock to be held by you hereunder and any additions and substitutions to said shares as specified in the Grant Documents. Recipient does hereby irrevocably constitute and appoint you as Recipient's attorney-in-fact and agent for the term of this escrow to execute with respect to such securities and other property all documents of assignment and/or transfer and all stock certificates necessary or appropriate to make all securities negotiable and complete any transaction herein contemplated.

4. This escrow shall terminate upon vesting of the shares or upon the earlier return of the shares to the Company.

5. If at the time of termination of this escrow you should have in your possession any documents, securities, or other property belonging to Recipient, you shall deliver all of same to any pledgee entitled thereto or, if none, to Recipient and shall be discharged of all further obligations hereunder.

6. Your duties hereunder may be altered, amended, modified or revoked only by a writing signed by all of the parties hereto.

7. You shall be obligated only for the performance of such duties as are specifically set forth herein and may rely and shall be protected in relying or refraining from acting on any instrument reasonably believed by you to be genuine and to have been signed or presented by the proper party or parties or their assignees. You shall not be personally liable for any act you may do or omit to do hereunder as Escrow Agent or as attorney-in-fact for Recipient while acting in good faith and any act done or omitted by you pursuant to the advice of your own attorneys shall be conclusive evidence of such good faith.

8. You are hereby expressly authorized to disregard any and all warnings given by any of the parties hereto or by any other person or corporation, excepting only orders or process of courts of law, and are hereby expressly authorized to comply with and obey orders, judgments or decrees of any court. In case you obey or comply with any such order, judgment or decree of any court, you shall not be liable to any of the parties hereto or to any other person, firm or corporation by reason of such compliance, notwithstanding any such order, judgment or decree being subsequently reversed, modified, annulled, set aside, vacated or found to have been entered without jurisdiction.

9. You shall not be liable in any respect on account of the identity, authority or rights of the parties executing or delivering or purporting to execute or deliver the Grant Documents or any documents or papers deposited or called for hereunder.

10. You shall not be liable for the outlawing of any rights under any statute of limitations with respect to these Joint Escrow Instructions or any documents deposited with you.

11. You shall be entitled to employ such legal counsel, including but not limited to Cooley LLP, and other experts as you may deem necessary properly to advise you in connection with your obligations hereunder, may rely upon the advice of such counsel, and may pay such counsel reasonable compensation therefor.

12. Your responsibilities as Escrow Agent hereunder shall terminate if you shall cease to be Secretary of the Company or if you shall resign by written notice to each party. In the event of any such termination, the Company may appoint any officer or assistant officer of the Company as successor Escrow Agent and Recipient hereby confirms the appointment of such successor or successors as his attorney-in-fact and agent to the full extent of your appointment.

13. If you reasonably require other or further instruments in connection with these Joint Escrow Instructions or obligations in respect hereto, the necessary parties hereto shall join in furnishing such instruments.

14. It is understood and agreed that should any dispute arise with respect to the delivery and/or ownership or right of possession of the securities, you are authorized and directed to retain in your possession without liability to anyone all or any part of said securities until such dispute shall have been settled either by mutual written agreement of the parties concerned or by a final order, decree or judgment of a court of competent jurisdiction after the time for appeal has expired and no appeal has been perfected, but you shall be under no duty whatsoever to institute or defend any such proceedings.

15. Any notice required or permitted hereunder shall be given in writing and shall be deemed effectively given on the earlier of (i) the date of personal delivery, including delivery by express courier, or delivery via electronic means, or (ii) the date that is five (5) days after deposit in any United States Post Box (whether or not actually received by the addressee), by registered or certified mail with postage and fees prepaid, addressed to each of the other parties hereunto entitled at the following addresses, or at such other addresses as a party may designate by ten (10) days' advance written notice to each of the other parties hereto:

COMPANY:	ZIOPHARM Oncology, Inc. One First Avenue Parris Building 34, Navy Yard Plaza Boston, MA 02129 Attn: General Counsel
RECIPIENT:	_____ _____ _____ _____
ESCROW AGENT:	ZIOPHARM Oncology, Inc. One First Avenue Parris Building 34, Navy Yard Plaza Boston, MA 02129 Attn: Secretary

16. By signing these Joint Escrow Instructions you become a party hereto only for the purpose of said Joint Escrow Instructions; you do not become a party to the Grant Documents.

17. This instrument shall be binding upon and inure to the benefit of the parties hereto, and their respective successors and permitted assigns. It is understood and agreed that references to "you" or "your" herein refer to the original Escrow Agent and to any and all successor Escrow Agents. It is understood and agreed that the Company may at any time or from time to time assign its rights under the Grant Documents and these Joint Escrow Instructions in whole or in part.

Very truly yours,

ZIOPHARM ONCOLOGY, INC.

By: _____

RECIPIENT

_____

_____

ESCROW AGENT:

_____

ZIOPHARM ONCOLOGY, INC.
2020 EQUITY INCENTIVE PLAN

FORM OF STOCK OPTION AGREEMENT

As reflected by your Stock Option Grant Notice ("***Grant Notice***") ZIOPHARM Oncology, Inc. (the "***Company***") has granted you an option under its 2020 Equity Incentive Plan (the "***Plan***") to purchase a number of shares of Common Stock at the exercise price indicated in your Grant Notice (the "***Option***"). Capitalized terms not explicitly defined in this Agreement but defined in the Grant Notice or the Plan shall have the meanings set forth in the Grant Notice or Plan, as applicable. The terms of your Option as specified in the Grant Notice and this Stock Option Agreement constitute your Option Agreement.

The general terms and conditions applicable to your Option are as follows:

1. GOVERNING PLAN DOCUMENT. Your Option is subject to all the provisions of the Plan, including but not limited to the provisions in:

(a) Section 6 regarding the impact of a Capitalization Adjustment, dissolution, liquidation, or Corporate Transaction on your Option;

(b) Section 9(e) regarding the Company's retained rights to terminate your Continuous Service notwithstanding the grant of the Option; and

(c) Section 8(c) regarding the tax consequences of your Option.

Your Option is further subject to all interpretations, amendments, rules and regulations, which may from time to time be promulgated and adopted pursuant to the Plan. In the event of any conflict between the Option Agreement and the provisions of the Plan, the provisions of the Plan shall control.

2. EXERCISE.

(a) You may generally exercise the vested portion of your Option for whole shares of Common Stock at any time during its term by delivery of payment of the exercise price and applicable withholding taxes and other required documentation to the Plan Administrator in accordance with the exercise procedures established by the Plan Administrator, which may include an electronic submission. Please review Sections 4(i), 4(j) and 7(b)(v) of the Plan, which may restrict or prohibit your ability to exercise your Option during certain periods.

(b) To the extent permitted by Applicable Law, you may pay your Option exercise price as follows:

(i) cash, check, bank draft or money order;

(ii) pursuant to a "cashless exercise" program as further described in Section 4(c)(ii) of the Plan if at the time of exercise the Common Stock is publicly traded;

(iii) subject to Company and/or Committee consent at the time of exercise, by delivery of previously owned shares of Common Stock as further described in Section 4(c)(iii) of the Plan; or

(iv) subject to Company and/or Committee consent at the time of exercise, if the Option is a Nonstatutory Stock Option, by a "net exercise" arrangement as further described in Section 4(c)(iv) of the Plan.

3. TERM. You may not exercise your Option before the commencement of its term or after its term expires. The term of your option commences on the Date of Grant and expires upon the earliest of the following:

(a) immediately upon the termination of your Continuous Service for Cause;

(b) three months after the termination of your Continuous Service for any reason other than Cause, Disability or death;

(c) 12 months after the termination of your Continuous Service due to your Disability;

(d) 18 months after your death if you die during your Continuous Service;

(e) immediately upon a Corporate Transaction if the Board has determined that the Option will terminate in connection with a Corporate Transaction,

(f) the Expiration Date indicated in your Grant Notice; or

(g) the day before the 10th anniversary of the Date of Grant.

Notwithstanding the foregoing, if you die during the period provided in Section 3(b) or 3(c) above, the term of your Option shall not expire until the earlier of (i) eighteen months after your death, (ii) upon any termination of the Option in connection with a Corporate Transaction, (iii) the Expiration Date indicated in your Grant Notice, or (iv) the day before the tenth anniversary of the Date of Grant. Additionally, the Post-Termination Exercise Period of your Option may be extended as provided in Section 4(i) of the Plan.

To obtain the federal income tax advantages associated with an Incentive Stock Option, the Code requires that at all times beginning on the date of grant of your Option and ending on the day three months before the date of your Option's exercise, you must be an employee of the Company or an Affiliate, except in the event of your death or Disability. If the Company provides for the extended exercisability of your Option under certain circumstances for your benefit, your Option will not necessarily be treated as an Incentive Stock Option if you exercise your Option more than three months after the date your employment terminates.

4. WITHHOLDING OBLIGATIONS. As further provided in Section 8 of the Plan: (a) you may not exercise your Option unless the applicable tax withholding obligations are satisfied, and (b) at the time you exercise your Option, in whole or in part, or at any time thereafter as requested by the Company, you hereby authorize withholding from payroll and any other amounts payable to you, and otherwise agree to make adequate provision for (including by means of a "cashless exercise" pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board to the extent permitted by the Company), any sums required to satisfy the federal, state, local and foreign tax withholding obligations, if any, which arise in connection with the exercise of your Option in accordance with the withholding procedures established by the Company. Accordingly, you may not be able to exercise your Option even though the Option is vested, and the Company shall have no obligation to issue shares of Common Stock subject to your Option, unless and until such obligations are satisfied. In the event that the amount of the Company's withholding obligation in connection with your Option was greater than the amount actually withheld by the Company, you agree to indemnify and hold the Company harmless from any failure by the Company to withhold the proper amount.

5. INCENTIVE STOCK OPTION DISPOSITION REQUIREMENT. If your option is an Incentive Stock Option, you must notify the Company in writing within 15 days after the date of any disposition of any of the shares of the Common Stock issued upon exercise of your option that occurs within two years after the date of your option grant or within one year after such shares of Common Stock are transferred upon exercise of your option.

6. TRANSFERABILITY. Except as otherwise provided in Section 4(e) of the Plan, your Option is not transferable, except by will or by the applicable laws of descent and distribution, and is exercisable during your life only by you.

7. CORPORATE TRANSACTION. Your Option is subject to the terms of any agreement governing a Corporate Transaction involving the Company, including, without limitation, a provision for the appointment of a stockholder representative that is authorized to act on your behalf with respect to any escrow, indemnities and any contingent consideration.

8. NO LIABILITY FOR TAXES. As a condition to accepting the Option, you hereby (a) agree to not make any claim against the Company, or any of its Officers, Directors, Employees or Affiliates related to tax liabilities arising from the Option or other Company compensation and (b) acknowledge that you were advised to consult with your own personal tax, financial and other legal advisors regarding the tax consequences of the Option and have either done so or knowingly and voluntarily declined to do so. Additionally, you acknowledge that the Option is exempt from Section 409A only if the exercise price is at least equal to the "fair market value" of the Common Stock on the date of grant as determined by the Internal Revenue Service and there is no other impermissible deferral of compensation associated with the Option. Additionally, as a condition to accepting the Option, you agree not make any claim against the Company, or any of its Officers, Directors, Employees or Affiliates in the event that the Internal Revenue Service asserts that such exercise is less than the "fair market value" of the Common Stock on the date of grant as subsequently determined by the Internal Revenue Service.

9. SEVERABILITY. If any part of this Option Agreement or the Plan is declared by any court or governmental authority to be unlawful or invalid, such unlawfulness or invalidity will not invalidate any portion of this Option Agreement or the Plan not declared to be unlawful or invalid. Any Section of this Option Agreement (or part of such a Section) so declared to be unlawful or invalid will, if possible, be construed in a manner which will give effect to the terms of such Section or part of a Section to the fullest extent possible while remaining lawful and valid.

10. OTHER DOCUMENTS. You hereby acknowledge receipt of or the right to receive a document providing the information required by Rule 428(b)(1) promulgated under the Securities Act, which includes the Prospectus. In addition, you acknowledge receipt of the Company's Insider Trading Policy.

11. QUESTIONS. If you have questions regarding these or any other terms and conditions applicable to your Option, including a summary of the applicable federal income tax consequences please see the Prospectus.

*** * * ***

ZIOPHARM ONCOLOGY, INC.

(2020 EQUITY INCENTIVE PLAN)

NOTICE OF EXERCISE

ZIOPHARM Oncology, Inc.
One First Avenue, Parris Building 34, Navy Yard Plaza
Boston, Massachusetts

Date of Exercise: _____

This constitutes notice to ZIOPHARM Oncology, Inc. (the "***Company***") that I elect to purchase the below number of shares of Common Stock of the Company (the "***Shares***") by exercising my Option for the price set forth below. Capitalized terms not explicitly defined in this Notice of Exercise but defined in the Grant Notice, Option Agreement or 2020 Equity Incentive Plan (the "***Plan***") shall have the meanings set forth in the Grant Notice, Option Agreement or Plan, as applicable. Use of certain payment methods is subject to Company and/or Committee consent and certain additional requirements set forth in the Option Agreement and the Plan.

Type of option (check one):	Incentive ☐	Nonstatutory ☐
Date of Grant:	_____	
Number of Shares as to which Option is exercised:	_____	
Certificates to be issued in name of:	_____	
Total exercise price:	$_____	
Cash, check, bank draft or money order delivered herewith:	$_____	
Value of _____ Shares delivered herewith:	$_____	
Regulation T Program (cashless exercise)	$_____	
Value of _____ Shares pursuant to net exercise:	$_____	

By this exercise, I agree (i) to provide such additional documents as you may require pursuant to the terms of the Plan, (ii) to satisfy the tax withholding obligations, if any, relating to the exercise of this Option as set forth in the Option Agreement, and (iii) if this exercise relates to an incentive stock option, to notify you in writing within 15 days after the date of any disposition of any of the Shares issued upon exercise of this Option that occurs within two years after the Date of Grant or within one year after such Shares are issued upon exercise of this Option.

Very truly yours,

_____

AMENDMENT TO EMPLOYMENT AGREEMENT

AMENDMENT TO EMPLOYMENT AGREEMENT (the ***"Amendment"***), dated as of November 23, 2020 (the "***Effective Date***"), by and between ZIOPHARM Oncology, Inc., a Delaware corporation (the ***"Company"***), and Robert Hadfield (the ***"Employee"***). Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to them in the Employment Agreement (as defined below).

W I T N E S S E T H:

WHEREAS, the Company currently employs Employee as its Executive Vice President, General Counsel, pursuant to the terms that certain Employment Agreement dated April 23, 2019 (the "***Employment Agreement***");

WHEREAS, the Company and Employee desire to amend the terms of the Employment Agreement as set forth in this Amendment.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereto agree as follows:

1) Amendment to Compensation upon Termination. Section 9(b) of the Employment Agreement is deleted in its entirely and replaced with the following:

"b) If Employee's employment is terminated by the Company without Cause, and other than by reason of death or Disability, or if the Employee's employment is terminated by the Employee for Good Reason, then the Company shall pay to Employee his Base Salary through the date of his termination and any expense reimbursement amounts for expenses incurred through the date of termination. In addition, if (i) Employee has executed and delivered to the Company, within sixty (60) days after the effective date of that termination, a written general release in a form satisfactory to the Company, whereby Employee shall release the Company from any and all potential liabilities arising out of Employee's employment with, or termination from employment from, the Company (a "***Release***"); and (ii) the rescission period specified in that release has expired, the Company shall pay to Employee a severance amount equal to twelve (12) months of Employee's then current Base Salary (the ***"Severance"***), less applicable withholdings and deductions, which amount shall be payable in a single lump sum on or before the 90th day after the effective date of that termination. For purposes of the calculation of the Severance and any payment of the Discretionary Performance Bonus target amount pursuant to Section 9(c), Employee's Base Salary and Discretionary Performance Bonus target amounts shall be calculated without giving effect to any reduction that would give rise to Employee's right to resign for Good Reason."

2) <u>Amendment to Effect of Termination on Benefits</u>. Section 10(a) of the Employment Agreement is deleted in its entirely and replaced with the following:

> "a) If Employee's employment with the Company is terminated, and pursuant to the Consolidated Omnibus Budget Reconciliation Act ("***COBRA***"), Employee may elect to continue his existing medical, vision and/or dental coverage under the Company's group health insurance plans, and the entire cost of any associated insurance premiums shall be borne entirely by Employee; provided, however, that if Employee's employment is terminated by the Company without Cause or the Employee resigns for Good Reason, the Company shall pay its contributions for such medical and dental insurance coverage (the ***"COBRA Premium Benefits***") for the first twelve (12) months following the date of termination (the "***COBRA Payment Period***")."

3) <u>Miscellaneous</u>. This Amendment shall not amend or modify the covenants, terms, conditions, rights and obligations of the parties hereto under the Employment Agreement, except as specifically set forth herein. The Employment Agreement shall continue in full force and effect in accordance with its terms as amended by this Amendment. This Amendment shall be construed, interpreted, and applied in accordance with the laws of the Commonwealth of Massachusetts. This Amendment may be executed in any number of counterparts, each of which shall constitute an original, but all of which together shall constitute one and the same instrument.

[***Remainder of page intentionally left blank; signature page follows***]

IN WITNESS WHEREOF, the parties hereto have executed this Amendment under seal as of the date first above written.

EMPLOYEE:

/s/ Robert Hadfield
Robert Hadfield

ZIOPHARM Oncology, Inc.:

/s/ Laurence Cooper
By: Laurence Cooper
Title: Chief Executive Officer

AMENDMENT TO EMPLOYMENT AGREEMENT

AMENDMENT TO EMPLOYMENT AGREEMENT (the ***"Amendment"***), dated as of November 23, 2020 (the "***Effective Date***"), by and between ZIOPHARM Oncology, Inc., a Delaware corporation (the ***"Company"***), and Sath Shukla (the ***"Employee"***). Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to them in the Employment Agreement (as defined below).

W I T N E S S E T H:

WHEREAS, the Company currently employs Employee as its Executive Vice President, Chief Financial Officer, pursuant to the terms that certain Employment Agreement dated June 4, 2019 (the "***Employment Agreement***");

WHEREAS, the Company and Employee desire to amend the terms of the Employment Agreement as set forth in this Amendment.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereto agree as follows:

1) Amendment to Compensation upon Termination. Section 9(b) of the Employment Agreement is deleted in its entirely and replaced with the following:

"b) If Employee's employment is terminated by the Company without Cause, and other than by reason of death or Disability, or if the Employee's employment is terminated by the Employee for Good Reason, then the Company shall pay to Employee his Base Salary through the date of his termination and any expense reimbursement amounts for expenses incurred through the date of termination. In addition, if (i) Employee has executed and delivered to the Company, within sixty (60) days after the effective date of that termination, a written general release in a form satisfactory to the Company, whereby Employee shall release the Company from any and all potential liabilities arising out of Employee's employment with, or termination from employment from, the Company (a "***Release***"); and (ii) the rescission period specified in that release has expired, the Company shall pay to Employee a severance amount equal to twelve (12) months of Employee's then current Base Salary (the ***"Severance"***), less applicable withholdings and deductions, which amount shall be payable in a single lump sum on or before the 90th day after the effective date of that termination. For purposes of the calculation of the Severance and any payment of the Discretionary Performance Bonus target amount pursuant to Section 9(c), Employee's Base Salary and Discretionary Performance Bonus target amounts shall be calculated without giving effect to any reduction that would give rise to Employee's right to resign for Good Reason."

2) <u>Amendment to Effect of Termination on Benefits</u>. Section 10(a) of the Employment Agreement is deleted in its entirely and replaced with the following:

> "a) If Employee's employment with the Company is terminated, and pursuant to the Consolidated Omnibus Budget Reconciliation Act ("***COBRA***"), Employee may elect to continue his existing medical, vision and/or dental coverage under the Company's group health insurance plans, and the entire cost of any associated insurance premiums shall be borne entirely by Employee; provided, however, that if Employee's employment is terminated by the Company without Cause or the Employee resigns for Good Reason, the Company shall pay its contributions for such medical and dental insurance coverage (the ***"COBRA Premium Benefits***") for the first twelve (12) months following the date of termination (the "***COBRA Payment Period***")."

3) <u>Miscellaneous</u>. This Amendment shall not amend or modify the covenants, terms, conditions, rights and obligations of the parties hereto under the Employment Agreement, except as specifically set forth herein. The Employment Agreement shall continue in full force and effect in accordance with its terms as amended by this Amendment. This Amendment shall be construed, interpreted, and applied in accordance with the laws of the Commonwealth of Massachusetts. This Amendment may be executed in any number of counterparts, each of which shall constitute an original, but all of which together shall constitute one and the same instrument.

[***Remainder of page intentionally left blank; signature page follows***]

IN WITNESS WHEREOF, the parties hereto have executed this Amendment under seal as of the date first above written.

EMPLOYEE:

/s/ Sath Shukla
Sath Shukla

ZIOPHARM Oncology, Inc.:

/s/ Laurence Cooper
By: Laurence Cooper
Title: Chief Executive Officer

CERTAIN CONFIDENTIAL INFORMATION CONTAINED IN THIS DOCUMENT, MARKED BY [***], HAS BEEN OMITTED BECAUSE ZIOPHARM ONCOLOGY, INC. HAS DETERMINED THE INFORMATION (I) IS NOT MATERIAL AND (II) WOULD LIKELY CAUSE COMPETITIVE HARM TO ZIOPHARM ONCOLOGY, INC. IF PUBLICLY DISCLOSED.

FORM OF RETENTION BONUS AGREEMENT

[DATE]

[NAME]

RE: Retention Agreement

Dear [NAME]:

ZIOPHARM Oncology, Inc. (the "***Company***") is pleased to offer you this Retention Agreement.

I. Eligibility for Retention Bonus

Thank you for your hard work and continuing efforts in support of the Company's success. In recognition of your performance, and as an incentive to remain with the Company, we are pleased to announce your eligibility to earn a special cash retention bonus in the aggregate amount of [$_____], less applicable payroll withholdings and deductions, pursuant to the terms and conditions set forth in this Retention Agreement (the "***Retention Bonus***").

Subject to the conditions described below, $[___] of the Retention Bonus will be payable in a lump sum on the Company's first regularly scheduled payroll date on or following April 1, 2021 (the "***First Retention Bonus Payment***"), $[___] of the Retention Bonus will be payable in a lump sum on the Company's first regularly scheduled payroll date on or following September 1, 2021 (the "***Second Retention Bonus Payment***"), and the remaining $[___] of the Retention Bonus will be payable in a lump sum on the Company's first regularly scheduled payroll date on or following December 1, 2021 (the "***Third Retention Bonus Payment***"); *provided*, *however*, that in order to earn each of the First Retention Bonus Payment, the Second Retention Bonus Payment and the Third Retention Bonus Payment, the following conditions must be satisfied, except to the extent provided for in Section II of this Retention Agreement:

(1) with respect to each of the First Retention Bonus Payment, Second Retention Bonus Payment and Third Retention Bonus Payment, you must remain continuously employed by the Company on a full-time basis in good performance standing through and including April 1, 2021 (with respect to the First Retention Bonus Payment), September 1, 2021 (with respect to the Second Retention Bonus Payment) and December 1, 2021 (with respect to the Third Retention Bonus Payment); and

(2) with respect to the Third Retention Bonus Payment only, the Company must achieve the following performance goal on or before December 1, 2021: [***], as determined in the sole discretion of, and certified in writing by, the Company's Board of Directors or its Compensation Committee (the "***Performance Goal***").

II. Impact of Employment Termination and Change in Control

Notwithstanding the foregoing Section I, if, on or prior to December 1, 2021, either (i) you incur a Qualifying Termination or (ii) there is a Qualifying Change in Control, you will be paid the next installment of the Retention Bonus (i.e., the First Retention Bonus Payment, Second Retention Bonus Payment or Third Retention Bonus Payment, as applicable) scheduled to be earned and paid to you (under the schedule set forth in in Section I) following your Qualifying Termination or the Qualifying Change in Control, as applicable, and subject to your execution of an effective Release described below, if applicable. For clarity: (1) if your Qualifying Termination or the Qualifying Change in Control occurs on or prior to April 1, 2021, you will still receive the First Retention Bonus Payment; (2) if your Qualifying Termination or the Qualifying Change in Control occurs after April 1, 2021, but on or prior to September 1, 2021, you will still receive the Second Retention Bonus Payment; and (3) if your Qualifying Termination or the Qualifying Change in Control occurs after September 1, 2021, but on or prior to December 1, 2021, you will still receive the Third Retention Bonus Payment, *if and only if* the Performance Goal is met.

In order to earn the payment described in this Section II in connection with a Qualifying Termination, you must execute and return a general waiver and release in a form provided by the Company (the "***Release***") within the applicable deadline set forth therein and not revoke the Release within the revocation period (if any) set forth therein; *provided*, *however*, that in no event may the applicable time period or revocation period extend beyond 60 days following your Qualifying Termination date.

If earned, the Retention Bonus payment described in this Section II will be paid to you in a lump sum cash amount, less applicable payroll withholdings and deductions, on the first administratively practicable Company payroll date following (i) in the case of your Qualifying Termination, the date the Release is effective and can no longer be revoked; and (ii) in the case of a Qualifying Change in Control, the date of such Change in Control; provided however that in either case, if such payment is the Third Retention Bonus Payment, such payment may be delayed until after December 1, 2021 if necessary to determine if the Performance Goal has been met. In no event shall any payment under this Section II be made later than March 15, 2022.

For the avoidance of doubt, the following, without limitation, will not constitute a Qualifying Termination: (i) you provide notice of your employment resignation or actually terminate your employment relationship by resignation for any reason, including retirement (but excluding your resignation for Good Reason), (ii) the Company terminates your employment for Cause, (iii) your employment is terminated due to your death or disability, or (iv) you are no longer in good performance standing.

Once you have incurred a Qualifying Termination, you shall no longer be eligible for or entitled to any payments under this Retention Agreement, except for the payment described in this Section II and any previous payment earned by you under Section I prior to your Qualifying Termination (but not yet paid to you). Under no circumstances will you be eligible to receive amounts under this Retention Agreement in excess of the Retention Bonus.

IV. Definitions

"***Cause***" has the meaning set forth in your written employment agreement with the Company;

"Good Reason" has the meaning set forth in your written employment agreement with the Company;

"***Qualifying Change in Control***" means a "***Change in Control***" as defined in the Company's 2020 Equity Incentive Plan that occurs prior to your termination of employment; and

"***Qualifying Termination***" means your employment with the Company terminates as a result of either (i) a termination by the Company without Cause and other than as a result of your death or disability or (ii) your resignation for Good Reason.

V. IRS Code Section 409A

It is intended that all payments provided for under this Retention Agreement satisfy, to the greatest extent possible, an exemption from the application of Section 409A of the Internal Revenue Code of 1986, as amended and the regulations and other guidance thereunder or any state law of similar effect ("***Section 409A***"), including but not limited to the exemption provided under Treasury Regulations Section 1.409A-1(b)(4) and in all cases will be paid not later than March 15 of the year following the year in which your right to such amount became vested, and any ambiguities herein shall be interpreted accordingly. It is intended that each installment of any benefit payable under this Retention Agreement be regarded as a separate "payment" for purposes of Treasury Regulations Section 1.409A-2(b)(2)(i). To the extent that an exemption from Section 409A is not available, the payments provided under this Retention Agreement are intended to comply with the requirements of Section 409A to the extent necessary to avoid adverse personal tax consequences and any ambiguities herein shall be interpreted accordingly; if and to the extent necessary to avoid adverse tax consequences under Section 409A, any Retention Bonus payment provided in connection with your Qualifying Termination shall not be payable unless and until you have incurred a "separation from service" as such term is defined in Treasury Regulations Section 1.409A-1(h) and, if the period during which you may consider and sign the Release spans two (2) calendar years, such payment will not be made until the later calendar year.

VI. Miscellaneous

The Retention Agreement is intended to provide a financial incentive to you and does not confer any rights to continued employment upon you. Nothing in this Retention Agreement shall alter your at-will employment relationship. Your rights and obligations under this Retention Agreement will be governed by and interpreted, construed and enforced in accordance with the laws of the Commonwealth of Massachusetts without regard to its or any other jurisdiction's conflicts of laws principles. You and the Company hereby agree and consent to be subject to the exclusive jurisdiction and venue of the state and federal courts located in the Commonwealth of Massachusetts, and hereby waive the right to assert the lack of personal or subject matter jurisdiction or improper venue in connection with any such suit, action or other proceeding.

Neither this Retention Agreement nor any of your rights and obligations under this Retention Agreement may be assigned, transferred or otherwise disposed of by you. The Company may assign its rights and obligations hereunder to any person or entity that succeeds to all or substantially all of Company's business or that aspect of Company's business in which you are principally involved.

This Retention Agreement is the complete, final and exclusive embodiment of the entire agreement between you and the Company with regard to the Retention Bonus, and it supersedes and replaces any other agreements (whether written or unwritten) you may have with the Company concerning these matters; *provided*, *however*, that, for the avoidance of doubt, this Retention Agreement does not supersede any severance or change in control benefits you may be entitled to under your written employment agreement or other written agreement with the Company, and any payments or benefits you are eligible for under any Company plan. This Retention Agreement is entered into without reliance on any promise or representation (written or unwritten) other than those expressly contained herein. The terms of this Retention Agreement may not be modified or amended except in a written agreement signed by you and a duly authorized officer of the Company.

Sincerely,

ZIOPHARM Oncology, Inc.

_____

[_____]
[_____]

ACKNOWLEDGMENT AND ACCEPTANCE

Accepted and Agreed:

_____ Date:_____

[NAME]

BUILDING B, EL RIO BUILDINGS
8000 EL RIO STREET, HOUSTON, TEXAS

LEASE SUMMARY SHEET

Execution Date:	October 15, 2019
Tenant:	**ZIOPHARM ONCOLOGY, INC.**, a Delaware corporation
Landlord:	**BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, acting for the use and benefit of The University of Texas M. D. Anderson Cancer Center, an institution of The University of Texas System
Building:	Building B of the El Rio Buildings, 8000 El Rio Street, Houston, Texas 77054. The Building consists of approximately 31,075 rentable square feet, in addition to an adjacent parking lot (the "**Parking Lot**").
Campus:	All of the land described and/or depicted on Exhibit 2 (including the land on which the Building is located), together with the Building described above, the buildings now known as Buildings A, C, D and E and any other building and/or improvements constructed thereon.
Premises:	The area in the Building known as Suites 8030 and 8032, containing approximately 8,443 rentable square feet in the aggregate, as depicted on the floor plans attached hereto as Exhibit 1A and made a part hereof (the "**Prime Premises**") together with the: **Generator Premises**, which are located in an area adjacent to the Building, as more particularly depicted on the Lease Plans. **Rooftop Premises**, which are located on the roof of the Building, as more particularly depicted on the Lease Plans. **Gasses/Tank Premises**, which are located in the loading dock area, as more particularly depicted on the Lease Plans. The term "**Premises**" shall mean the Prime Premises, Generator Premises, Rooftop Premises, and Gasses/Tank Premises, as applicable. The Premises are shown the Lease Plans attached hereto as Exhibit 1A, Exhibit 1B, Exhibit 1C, and Exhibit 1D, and made a part hereof (the "**Lease Plans**"). Landlord and Tenant stipulate and agree that the Rentable Square Footage of the Building and the Rentable Square Footage of the Premises are correct and shall not be remeasured. The Prime Premises shall extend to the interior surface of all exterior walls and the interior surface of the roof of the Building (i.e., it shall be inclusive of all interior walls and ceiling rafters).

Property:	The Building, the Parking Lot, and the land on which the Building and Parking Lot are located, together with any other improvements thereon.
Parking Areas:	The parking structures (surface lots and parking decks, including the Parking Lot adjacent to the Building) located on the Campus that Landlord provides for parking by all tenants of space on the Campus.
Term Commencement Date, or Commencement Date:	The earlier to occur of (i) the date that Tenant commences to use the Premises for any Permitted Use, or (ii) the date on which Landlord delivers the Premises to Tenant in the Delivery Condition.
Rent Commencement Date:	The earlier to occur of (i) the date on which Tenant has completed Tenant's Work, or (ii) the date which is four (4) months following the Commencement Date.
Delivery Condition:	The Premises shall be delivered to Tenant free of all occupants and their possessions, in compliance with all applicable Legal Requirements, and otherwise in their current "as is" "where is" condition.
Expiration Date:	Seven (7) years after the Rent Commencement Date, except that if the Rent Commencement Date does not occur on the first day of a calendar month, then the Expiration Date shall be the last day of the calendar month in which the seventh (7^{th}) anniversary of the Rent Commencement Date occurs.
Permitted Uses:	Subject to Legal Requirements, general office, research, development laboratory and manufacturing (including GMP Manufacturing) use, and other ancillary uses (including, but not limited to, storage uses) related to the foregoing.

Base Rent:	RENT YEAR	ANNUAL BASE RENT	MONTHLY PAYMENT
	Year 1	$208,288.81	$17,357.40
	Year 2	$208,288.81	$17,357.40
	Year 3	$214,537.47	$17,878.12
	Year 4	$220,973.60	$18,414.47
	Year 5	$227,602.81	$18,966.90
	Year 6	$234,430.89	$19,535.91
	Year 7	$241,463.82	$20,121.98

Additional Rent All sums other than Base Rent payable by Tenant to Landlord under this Lease.

Rent Year: Rent Year 1 shall be the twelve-(12)-month period commencing as of the Rent Commencement Date, except that if the Rent Commencement Date occurs on other than the first day of a calendar month, then Rent Year 1 shall commence as of the Rent Commencement Date and shall end on the last day of the calendar year in which the first anniversary of the Rent Commencement Date occurs. Each Rent Year after Rent Year 1 shall be the twelve-(12)-month period immediately following the preceding Rent Year.

Tenant's Share: A fraction, the numerator of which is the number of rentable square feet in the Prime Premises and the denominator of which is the number of rentable square feet in the Building that is not exempt from taxation by the relevant taxing authority. As of the Execution Date, Tenant's Share is 100%.

Business Days: All days during the Term except Saturdays, Sundays, and days observed in the State of Texas as legal holidays.

EXHIBIT 1A	LEASE PLAN - PRIME PREMISES
EXHIBIT 1B	LEASE PLAN – GENERATOR PREMISES
EXHIBIT 1C	LEASE PLAN - ROOFTOP PREMISES
EXHIBIT 1D	LEASE PLAN – GASSES/TANK PREMISES
EXHIBIT 2	DESCRIPTION/PLAN OF CAMPUS
EXHIBIT 3	WORK LETTER
EXHIBIT 3-1	FIT PLAN OF TENANT'S INITIAL WORK
EXHIBIT 4	LANDLORD'S SERVICES
EXHIBIT 5	INTENTIONALLY OMITTED
EXHIBIT 6	TENANT WORK INSURANCE SCHEDULE

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THIS INDENTURE OF LEASE (this "**Lease**") is hereby made and entered into on the Execution Date by and between Landlord and Tenant.

Each reference in this Lease to any of the terms and titles contained in any Exhibit attached to this Lease shall be deemed and construed to incorporate the data stated under that term or title in such Exhibit. All capitalized terms not otherwise defined herein shall have the meanings ascribed to them as set forth in the Lease Summary Sheet which is attached hereto and incorporated herein by reference.

1. LEASE GRANT; TERM; APPURTENANT RIGHTS; EXCLUSIONS

1.1 Lease Grant.

Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, the Premises upon and subject to terms and conditions of this Lease, for a term of years commencing on the Term Commencement Date and, unless earlier terminated or extended pursuant to the terms hereof, ending on the Expiration Date (the "**Term**").

1.2 Memorandum of Lease. Neither party shall record this Lease, but each of the parties hereto agrees to join in the execution, in recordable form, of a statutory memorandum of lease in Tenant's reasonable form, which memorandum of lease may be recorded by Tenant with appropriate registry of (the "**Registry**") at Tenant's sole cost and expense. If a memorandum of lease was previously recorded with the Registry, upon the expiration or earlier termination of this Lease, Landlord shall deliver to Tenant a notice of termination of lease and Tenant shall promptly execute and deliver the same to Landlord for Landlord's execution and recordation with the Registry. Should Tenant not deliver to Landlord an executed notice of termination with ten (10) days, Landlord may unilaterally file a release of memorandum of lease.

1.3 Appurtenant Rights.

(a) Common Areas. Subject to the terms of this Lease and the Rules and Regulations (hereinafter defined), Tenant shall have, as appurtenant to the Premises, the right to use in common with other tenants of the Campus, the following areas (such areas are hereinafter referred to as the "**Common Areas**"): (i) common walkways, streets and driveways necessary for access to the Premises, Building and Parking Areas, (ii) the Parking Areas, and (iii) other areas and facilities located in the Building, on the Land, or elsewhere on the Campus designated by Landlord from time to time for the common use of tenants of the Building and other entitled thereto. Except as provided under Sections 2.1 and 2.2, Landlord shall not change the Common Areas in a way as to alter or diminish the aggregate quantity, quality, utility or character thereof or interfere with Tenant's access to the Premises in more than a de minimis manner.

(b) Parking. During the Term, Landlord shall, subject to the terms hereof, make available up to thirty (30) unreserved parking spaces for Tenant's use at the prevailing monthly rate for tenants of the Campus (which rate is currently $50 per pass, per month) (the "**Parking Charges"**) in the Parking Lot (the "**Parking Spaces**"). Said Parking Spaces will be on an unassigned, non-reserved basis, and shall be subject to such Rules and Regulations, as may be in effect for the use of the parking areas from time to time. Reserved and handicap parking spaces must be honored. Tenant shall pay such Parking Charges solely with respect to the Parking Spaces Tenant elects to use (which election may be changed from time to time upon not less than five (5) Business Days' prior notice) directly to Landlord's parking office, pursuant to written instructions to be provided to Tenant prior to the Commencement Date.

1.4 Tenant's Access. From and after the Term Commencement Date and until the end of the Term, Tenant shall have access to the Premises twenty-four (24) hours a day, seven (7) days a week, subject to Landlord's reasonable Building security requirements, Legal Requirements, the Rules and Regulations, the terms of this Lease, and Force Majeure (hereinafter defined).

2. RIGHTS RESERVED TO LANDLORD

2.1 Additions and Alterations. Landlord reserves the right, at any time and from time to time, to make such changes, alterations, additions, improvements, repairs or replacements in or to the Property (including the Premises but, with respect to the Premises, only for purposes of repairs, maintenance, replacements and the exercise of any other rights expressly reserved to Landlord herein) and the fixtures and equipment therein, as well as in or to the street entrances and/or the Common Areas, as it may deem necessary or desirable, provided, however, that there be no obstruction of permanent access to, or interference with the use and enjoyment of, the Premises by Tenant. Subject to the foregoing, Landlord expressly reserves the right to temporarily close all, or any portion, of the Common Areas for the purpose of making repairs or changes thereto.

2.2 Additions to the Property. Landlord may at any time or from time to time (i) construct additional building(s) and improvements and related site improvements (collectively, "**Future Development**") in all or any part of the Property and/or (ii) change the location or arrangement of any improvement outside the Building in or on the Property or all or any part of the Common Areas, or add or deduct any land to or from the Property; provided that there shall be no increase in Tenant's obligations or interference with Tenant's rights under this Lease in connection with the exercise of the foregoing reserved rights.

2.3 Name and Address of Building. Landlord reserves the right at any time and from time to time to change the name or address of the Building and/or the Property, provided Landlord gives Tenant at least three (3) months' prior written notice thereof.

2.4 Landlord's Access.

(a) Subject to the terms hereof, Tenant shall (i) upon reasonable advance notice, and in any event upon at least one (1) Business Day's prior written notice (except that no notice shall be required in emergency situations), permit Landlord and any holder of a Mortgage (hereinafter defined) (each such holder, a "**Mortgagee**"), and the agents, representatives, employees and contractors of each of them, where accompanied in non-emergency situations by a representative of Tenant (so long as Tenant shall make such representative available upon at least one (1) Business Day's request), to have reasonable access to the Premises at all reasonable hours for the purposes of inspection, making repairs, replacements or improvements in or to the Premises or the Building or equipment therein (including, without limitation, sanitary, electrical, heating, air conditioning or other systems), complying with all applicable laws, ordinances, rules, regulations, statutes, by-laws, court decisions and orders and requirements of all public authorities (collectively, "**Legal Requirements**"), or exercising any right reserved to Landlord under this Lease; (ii) permit Landlord and its agents and employees, at reasonable times, upon reasonable advance notice (but not less than three (3) Business Days), to show the Premises during normal business hours (i.e. Monday – Friday 7 A.M. - 6 P.M., Saturday 7 A.M. – 12 P.M., excluding federal and state holidays) ("**Normal Business Hours**") to any prospective Mortgagee or purchaser of the Building and/or the Property or of the interest of Landlord therein, and, during the last twelve (12) months of the Term or at any time after the occurrence of an Event of Default, prospective tenants; and (iii) upon reasonable prior written notice from Landlord (but not less than three (3) Business Days, provided that no notice shall be required in emergency situations), permit Landlord and its agents, at Landlord's sole cost and expense, to perform environmental audits, environmental site investigations and environmental site assessments ("**Site Assessments**") in, on, under and at the Premises and the Land, it being understood that Landlord shall repair any damage arising as a result of the Site Assessments at Landlord's sole cost and expense, and such Site Assessments may include both above and below the ground testing and such other tests as may be necessary or appropriate to conduct the Site Assessments. Except to the extent arising as a result of the gross negligence or willful misconduct of any of Tenant and/or Tenant's agents, servants, employees, consultants, contractors, subcontractors, invitees, licensees and/or subtenants (collectively with Tenant, the "**Tenant Parties**"), Landlord's entry shall be at its sole risk.

(b) Except in emergency situations, anyone who has access to any portion of the Premises pursuant to this Section 2.4 after Tenant has first commenced to use the Premises for the Permitted Uses may, at Tenant's election, be subject to Tenant's reasonable security measures and protocols, which may include limiting access under Section 2.4(a)(ii) to Normal Business Hours, requiring that any party accessing the Premises under Section 2.4(a)(ii) execute a commercially reasonable confidentiality agreement, requiring the wearing of an ID badge, and obligating visitors to comply with reasonable protocols so as protect confidential information contained within the Premises. Tenant may identify certain areas of the Premises that require limited access and strict security measures ("**Secure Areas**") by written notice to Landlord from time to time. Except in the event of an emergency threatening personal injury or damage to property or a violation of any Legal Requirement, and except as otherwise approved by Tenant, any entry in the Secure Areas must be done in the presence of a representative of Tenant so long as Tenant makes such representative available upon at least one (1) Business Day's advance notice. Notwithstanding the foregoing, in case of emergency, Landlord may enter any part of the Premises without prior notice or a Tenant's representative; provided that Landlord provides Tenant with notice of such entry as soon as reasonably possible thereafter and Landlord takes reasonable precautions to protect confidentiality, and the health and safety of its entrants. The parties hereto acknowledge that all confidentiality provisions, as they apply to Landlord, are potentially subject to the provisions of the Texas Public Information Act, provided that the foregoing acknowledgement shall in no way derogate from the terms and conditions of Section 26.12(c) of this Lease.

(c) Except in the event of an emergency, (i) Landlord shall consult with Tenant in connection with the scheduling of all such access under this Section 2.4; (ii) to the extent such access shall cause material interference with Tenant's business operations, Landlord shall, at Tenant's request, schedule any such entry pursuant to Sections 2.4(a)(i) and (iii) after Normal Business Hours to the extent reasonably practicable in good faith.

(d) Any provision of this Lease that requires or gives Landlord the right to enter the Premises during the Term shall be governed by the provisions of this Section 2.4 and this Article 2.

2.5 Pipes, Ducts and Conduits. Tenant shall permit Landlord to erect, use, maintain and relocate pipes, ducts and conduits in and through the Premises, provided the same are, to the extent reasonably practicable, located to the exterior of interior walls, above the ceiling, or below the floor slab of the Premises, and if not reasonably practicable, the same shall not reduce the floor area by more than a de minimis amount or adversely affect the appearance or utility of the Premises.

2.6 Minimize Interference. Except in the event of an emergency, Landlord shall, in connection with the exercise of any of the foregoing rights under this Article 2 (and subject to the other limitations of this Article 2), (x) use reasonable efforts to minimize any interference with Tenant's business operations and use and occupancy of the Premises, Parking Lot and other Common Areas in accordance with the terms of this Lease, (y) not reduce the floor area by more than a de minimis amount and (z) not materially adversely affect the appearance or utility of the Premises. Notwithstanding anything to the contrary, Landlord shall not change the Common Areas in a way as to alter or diminish the aggregate quantity, quality, utility or character thereof or interfere with Tenant's access to the Premises in more than a de minimis manner. In exercising its reserved rights under this Article 2, Landlord agrees as follows: it shall require all workers to use reasonable efforts to protect all improvements, equipment, surfaces, finishes, fixtures, furnishings and personal property of Tenant in the Premises, and to use reasonable efforts to minimize the dispersion of construction dust and dirt throughout the Premises, including sufficient use of drop cloths and drapes in a manner consistent with good and accepted construction practices in occupied space (taking into consideration the particular use of such space); upon completion of all such work, Landlord shall leave the Premises free of all construction dirt, debris, supplies and construction-related equipment and shall restore the Premises to substantially the condition they were in prior to such work; and if as a result of such work more than 10 useable square feet of the Premises have been permanently rendered unusable, then there shall be a ratable adjustment of Base Rent. In exercising its reserved rights under this Article 2, Landlord shall not have the right to reduce the number of usable square feet in the Premises except (a) as permitted under Section 2.5 above, or (b) in a de minimis amount to the extent necessary in order to perform Landlord's obligations under Section 19.1 below, and then only (i) to the extent compliance with Legal Requirements may not be accomplished by using space outside the Premises, and (ii) after consulting with Tenant with respect thereto.

3. CONDITION OF PREMISES; CONSTRUCTION.

3.1 Condition of Premises. Tenant acknowledges and agrees that Landlord has disclosed the existence of certain foundation defects at the Premises, Building and Campus. Tenant has had the opportunity to enter and inspect the Premises to view and assess such foundation defects. Landlord represents and warrants to Tenant that it has provided Tenant with copies of all reports, studies and other assessments in its possession or control related to such foundation defects. Notwithstanding anything in this Lease to the contrary, including but not limited to the insurance and indemnification obligations set forth in Article 14, except to the extent such damage, claims or losses arise from the willful misconduct of Landlord or any of the Landlord Parties, Tenant waives any claim and agrees to hold Landlord harmless for any damage, claims or losses to Tenant's improvements, personal property or equipment as a result of or related to defects in the foundation of the Building. Tenant acknowledges and agrees that, except for Landlord's obligation to deliver the Premises in the Delivery Condition, and except as otherwise expressly set forth in this Lease, Tenant is leasing the Premises in their "**AS IS**," "**WHERE IS**" condition and with all faults on the Execution Date, without representations or warranties, express or implied, in fact or by law, of any kind, and without recourse to Landlord. Tenant's commencement of business operations from the Premises shall be conclusive evidence, as against Tenant, that the Premises and the Building were in a good and satisfactory condition as required by the Lease. Notwithstanding any provision of this Section 3.1 to the contrary, nothing in this Section 3.1 shall in any way modify or derogate from Landlord's obligations to maintain the Building and Premises in accordance with the terms and conditions of this Lease (including, without limitation, Section 10.2 hereof).

3.2 Delivery of Premises.

(a) Landlord shall use diligent efforts to deliver the Premises to Tenant in the Delivery Condition not later than October 11, 2019 (the "**Estimated Term Commencement Date**"). However, except for Tenant's remedies set forth in this Section 3.2: (i) Tenant's sole remedies shall be a delay in the Term Commencement Date, (ii) Tenant shall have no claim or rights against Landlord, and Landlord shall have no liability or obligation to Tenant in the event of delay in the Term Commencement Date, and (iii) no delay in the Term Commencement Date shall have any effect on the parties rights or obligations under this Lease. Without limiting the foregoing, as liquidated damages and the sole and exclusive remedies of Tenant on account thereof, (x) if the Term Commencement Date has not occurred by the Estimated Term Commencement Date, then for and with respect to each day between the Estimated Term Commencement Date and the date on which the Term Commencement Date actually occurs, Tenant shall receive a credit against the Rent payable under this Lease (to be applied to the Rent payable immediately after the Rent Commencement Date) in an amount equal to the per diem Base Rent payable for the Premises, and (y) in addition, if (i) the Term Commencement Date has not occurred by October 31, 2019 (the "**Lease Cancellation Date**"), and (ii) not less than fifteen (15) days prior to the delivery of a Termination Notice (as hereinafter defined) Tenant shall have delivered a Reminder Notice (as hereinafter defined) to Landlord, then at any time after the Lease Cancellation Date and prior to the date on which the Term Commencement Date actually occurs, Tenant may elect to terminate this Lease by giving Landlord a Termination Notice, with such termination to be effective immediately upon the giving by Tenant of such Termination Notice. If Tenant timely and validly terminates this Lease in accordance with the foregoing provisions, this Lease shall be null and void and of no further force and effect, and except as expressly and specifically set forth herein, the parties shall have no further liabilities, responsibilities, or obligations hereunder. The Rent credits set forth above shall be credited against amounts due and payable under this Lease, and in no event will Landlord be required to make any payment to Tenant with respect to any Rent credits that would otherwise be available to Tenant under this Section 3.2. If the Term Commencement Date does not occur prior to the Lease Cancellation Date, and Tenant does not terminate this Lease in accordance with the foregoing provisions, then Tenant shall continue to accrue a credit against the Rent payable under this Lease in the amounts set forth above for and with respect to each day between the Estimated Term Commencement Date and the date on which the Term Commencement Date actually occurs.

(b) Definitions.

(i) For purposes of this Section 3.2 only, a "**Reminder Notice**" shall mean a written notice delivered by Tenant to Landlord stating the following in capitalized and bold type on the first page of such notice: "**IN ACCORDANCE WITH AND SUBJECT TO SECTION 3.2 OF THE LEASE, IF THE COMMENCEMENT DATE DOES NOT OCCUR BY THE LEASE CANCELLATION DATE, THE TENANT MAY TERMINATE THE LEASE. LANDLORD IS HEREBY NOTIFIED THAT THE COMMENCEMENT DATE HAS NOT OCCURRED AS OF THE DATE OF THIS NOTICE**." A "**Termination Notice**" shall mean a written notice delivered by Tenant to Landlord stating the following in capitalized and bold type on the first page of such notice: "**IN ACCORDANCE WITH AND SUBJECT TO THE TERMS AND CONDITIONS OF SECTION 3.2 OF THE LEASE, TENANT HEREBY ELECTS TO TERMINATE THE LEASE.**"

3.3 Foundation Defects; Right to Terminate.

(a) Landlord acknowledges that Tenant intends to perform certain studies and assessments related to the foundation of the Building ("**Foundation Studies**"). In the event Tenant, in its sole discretion, is dissatisfied with the results of any Foundation Studies (a "**Termination Event**"), then subject to the full and complete satisfaction of the Termination Conditions Precedent (as hereinafter defined), in accordance with the provisions of this Section 3.3, Tenant shall have the irrevocable option to terminate this Lease (a "**Termination**"). The conditions precedent (the "**Termination Conditions Precedent**") to the effectiveness of any such Termination shall be as follows: (i) Tenant shall deliver written notice (a "**Termination Notice**") of such Termination to Landlord by not later than the date which is thirty (30) days following the Execution Date; (ii) the effective date of any such Termination (the "**Termination Date**") shall be a date set forth in Tenant's Termination Notice, but in no event more than forty-five (45) days following the Execution Date; and (iii) on the Termination Date, no Event of Default is then continuing.

(b) Provided that all of the Termination Conditions Precedent have been fully and completely satisfied, then effective as of the Termination Date, this Lease, and the rights of Tenant with respect to the Premises, shall terminate and expire with the same force and effect as if such Termination Date had originally been specified as the Expiration Date. Prior to the later of (such later date, the "**Surrender Date**") (i) the Termination Date, and (ii) the date on which Tenant actually surrenders and yields-up the Premises, Tenant shall comply with all of the terms and provisions of this Lease and shall perform all of its obligations hereunder. By not later than the Termination Date, Tenant shall surrender and yield-up the Premises in the condition in which the Premises are required to be surrendered pursuant to Section 21.1 at the expiration of the Term. All Tenant's Property and Alterations of any kind, nature or description remaining in the Premises after the Surrender Date shall be and become the property of Landlord and may be disposed of by Landlord, without payment from Landlord and without the necessity to account therefor to Tenant.

(c) Effective as of the Termination Date, Landlord shall be released from any and all obligations and liabilities thereafter accruing under this Lease. Nothing contained herein shall constitute a waiver, limitation, amendment, or modification of any of the liabilities and obligations of Landlord under this Lease which accrue or arise prior to the Termination Date. Effective as of the Surrender Date, Tenant shall be released from any and all liabilities and obligations thereafter accruing under this Lease. Nothing contained herein shall constitute a waiver, limitation, amendment, or modification of any of the liabilities and obligations of Tenant under this Lease which accrue or arise prior to the Surrender Date.

(d) Without limiting the foregoing, if Tenant fails to yield up and surrender the Premises by the Termination Date, then for and with respect to each day between the Termination Date and the Surrender Date, Tenant shall pay a holdover charge at the rate set forth in Section 21.3. Nothing herein contained shall constitute a release, waiver, limitation, or restriction of any rights or remedies of Landlord on account of Tenant's failure to surrender the Premises by the Termination Date, including, without limitation, any rights or remedies afforded to Landlord in Sections 21.1 and 21.3.

(e) The foregoing provisions shall be self-operative; provided, however, on the request of either party Landlord and Tenant will enter into a mutually satisfactory amendment to this Lease evidencing such Termination of this Lease. Time is of the essence of this Section 3.3.

4. USE OF PREMISES

4.1 Permitted Uses. During the Term, Tenant shall use the Premises only for the Permitted Uses and for no other purposes. Service and utility areas (whether or not a part of the Premises) shall be used only for the particular purpose for which they are designed. Tenant shall keep the Premises equipped with appropriate safety appliances to the extent required by applicable laws or insurance requirements.

4.2 Prohibited Uses.

(a) Notwithstanding any other provision of this Lease, Tenant shall not use the Premises or the Building, or any part thereof, or suffer or permit the use or occupancy of the Premises or the Building or any part thereof by any of the Tenant Parties (i) in violation of Legal Requirements; (ii) in a manner which (taking into account the use of the Building as a combination laboratory, research and development and office building and the Permitted Uses) shall (a) materially impair the appearance of the Building; (b) materially impair, interfere with or otherwise diminish the quality of any of the Building services or the proper and economic heating, cleaning, ventilating, air conditioning or other servicing of the Building or Premises, or the use or occupancy of any of the Common Areas; or (c) cause harmful air emissions, laboratory odors or noises or any unusual or other objectionable odors, noises or emissions to emanate from the Premises in violation of Legal Requirements; or (iii) in a manner which is inconsistent with the operation and/or maintenance of the Building as a first-class combination office, research, development and laboratory facility.

(b) With respect to the use and occupancy of the Premises and the Common Areas, Tenant will not: (i) place or maintain any signage (except as set forth in Article 12 below), trash, refuse or other articles in any exterior vestibule or entry of the Premises, on the footwalks or corridors adjacent thereto or elsewhere on the exterior of the Premises, nor obstruct any driveway, corridor, footwalk, parking area, mall or any other Common Areas; (ii) permit undue accumulations of or burn garbage, trash, rubbish or other refuse within or without the Premises; (iii) receive or ship articles of any kind outside of those areas reasonably designated by Landlord; or (iv) conduct or permit to be conducted any auction, going out of business sale, bankruptcy sale (unless directed by court order), or other similar type sale in or connected with the Premises.

5. RENT; ADDITIONAL RENT

5.1 Base Rent.

(a) Commencing as of the Rent Commencement Date and continuing thereafter throughout the remainder of the Term, Tenant shall pay Base Rent to Landlord in equal monthly installments, in advance and without demand on the first day of each month for and with respect to such month. Unless otherwise expressly provided herein, the payment of Base Rent, Additional Rent and other charges reserved and covenanted to be paid under this Lease with respect to the Premises (collectively, "**Rent**") shall commence on the Rent Commencement Date, and shall be prorated for any partial months. Rent shall be payable to Landlord or, if Landlord shall so direct in writing, to Landlord's agent or nominee, in lawful money of the United States which shall be legal tender for payment of all debts and dues, public and private, at the time of payment.

(b) Pursuant to the terms of (i) that certain Research and Development Agreement, by and between Landlord and Tenant dated as of August 17, 2015 (as amended, the "**Existing R&D Agreement**"), and (ii) that certain 2019 Research and Development Agreement, by and between Landlord and Tenant dated on or about the date hereof (the "**2019 R&D Agreement**"), Tenant has deposited certain funds with Landlord or committed certain amounts to reimburse Landlord for cost incurred under such agreement. Notwithstanding any provision of this Lease to the contrary, the remaining balance of the funds deposited or committed under the Existing R&D Agreement and the 2019 R&D Agreement (collectively, the "**Remaining Funds**") may, at Tenant's sole election, be applied to the payment of any and all Rent obligations under this lease. Tenant may elect in writing whether to first apply the remaining balance of the funds deposited or committed under the Existing R&D Agreement or the 2019 R&D Agreement. Upon such election to apply any Remaining Funds towards Rent due under this Lease, (i) with respect to Remaining Funds deposited under the Existing R&D Agreement, the applicable portion of Rent shall be debited by Landlord from the Remaining Funds on or before the first day of each calendar month during the Term, and (ii) with respect to Remaining Funds committed under the 2019 R&D Agreement, Tenant shall pay such amounts to Landlord in accordance with the terms and conditions of this Lease, and deliver notice to Landlord that such funds are being paid out of Remaining Funds under the 2019 R&D Agreement. The foregoing shall in no way derogate from Landlord's responsibility to invoice Tenant for amounts due hereunder, and not more than thirty (30) days following any application of any Remaining Funds, Landlord shall deliver to Tenant a statement reflecting such applied amounts. In no event will more than $25,000,000 in Remaining Funds be used to pay amounts due to Landlord under this Lease.

5.2 Costs to Operate the Campus, Building and Land. Landlord acknowledges and agrees that (i) Landlord's good faith estimate of the portion of the costs and expenses associated with the operation, maintenance, repair and replacement of the Campus and Property (including, without limitation, costs and expenses associated with Landlord's Services set forth in Exhibit 4 attached hereto) (collectively, "**Operating Expenses**") allocated to the Premises have been incorporated into the Base Rent due under this Lease, and (ii) in no event shall Tenant be responsible or liable for any Operating Costs, such costs being the sole responsibility of Landlord.

5.3 Taxes.

(a) Landlord is an agency of the state of Texas. As such, Landlord does not pay real estate taxes or personal property taxes on property used and controlled by Landlord. Such exemption does not apply to the Premises when under the use and control of Tenant. "**Taxes**" shall mean the real estate taxes and other taxes, levies and assessments imposed upon the Property and upon any personal property of Landlord used in the operation thereof, or on Landlord's interest therein or such personal property; charges, fees and assessments for transit, housing, police, fire or other services or purported benefits to the Building and the Property (including without limitation any community preservation assessments); service or user payments in lieu of taxes; and any and all other taxes, levies, betterments, assessments and charges arising from the ownership, leasing, operation, use or occupancy of the Building and the Property or based upon rentals derived therefrom, which are or shall be imposed by federal, state, county, municipal or other governmental authorities. Taxes shall not include any sales, inheritance, estate, succession, gift, franchise, rental, income or profit tax, capital stock tax, capital levy or excise, any income taxes arising out of or related to the ownership and operation of the Building, or any interest or penalties resulting from the late payment of Taxes by Landlord (except to the extent due to Tenant's failure to make timely payments); provided, however, that if during the Term the present system of taxation of real or personal property shall be changed, any tax, excise, fee, levy, charge or assessment, however described, that may in the future be levied or assessed as a substitute for, in whole or in part, any tax, levy or assessment which would otherwise constitute Taxes, whether or not now customary or in the contemplation of the parties on the Execution Date of this Lease, shall constitute Taxes, but only to the extent calculated as if the Building were the only real estate owned by Landlord. "Taxes" shall also include reasonable expenses (including without limitation legal and consultant fees) of tax abatement or other proceedings contesting assessments or levies.

Landlord shall allocate Taxes which are incurred with respect to the Common Areas of the Campus, if any, on a reasonable and equitable basis. From and after substantial completion of any occupiable improvements constructed as part of any Future Development, if such improvements are not separately assessed, Landlord shall reasonably allocate Taxes between the Building and such improvements and the land area associated with the same.

(b) "**Tax Period**" shall be any fiscal/tax period in respect of which Taxes are due and payable to the appropriate governmental taxing authority (i.e., as mandated by the governmental taxing authority), any portion of which period occurs during the Term.

(c) **Payment of Taxes**. Commencing as of the Rent Commencement Date and continuing thereafter throughout the remainder of the Term of the Lease, Tenant shall pay to Landlord, as Additional Rent, Tenant's Share of Taxes. Landlord may make a good faith estimate of the Taxes to be due by Tenant for any Tax Period or part thereof during the Term, and Tenant shall pay to Landlord, on the Rent Commencement Date and on the first (1st) day of each calendar month thereafter, an amount equal to Tenant's Share of Taxes for such Tax Period or part thereof divided by the number of months therein. Landlord may estimate and re-estimate Tenant's Share of Taxes and deliver a copy of the estimate or re-estimate to Tenant, provided that no such re-estimate shall occur more than once with respect to any Tax Period. Thereafter, the monthly installments of Tenant's Share of Taxes shall be appropriately adjusted in accordance with the estimations so that, by the end of the Tax Period in question, Tenant shall have paid all of Tenant's Share of Taxes as estimated by Landlord. Any amounts paid based on such an estimate shall be subject to adjustment as herein provided when actual Taxes are available for each Tax Period, provided however, in the event Landlord fails to deliver an invoice to Tenant reflecting an increase in actual Taxes on or before the later of (i) the date which is ninety (90) days following Landlord's receipt of such tax bill, or (ii) August 31st following the date on which the tax bill is available, Tenant shall have no obligation or liability with respect to such increased amounts. If the total of such monthly remittances is greater than Tenant's Share of Taxes actually due for such Tax Period, then, provided no Event of Default has occurred nor any event which, with the passage of time and/or the giving of notice would constitute a Monetary Event of Default, Tenant may credit the difference against the next installment of Additional Rent on account of Taxes due hereunder, except that if such difference is determined after the end of the Term, Landlord shall refund such difference to Tenant within thirty (30) days after such determination to the extent that such difference exceeds any amounts then due from Tenant to Landlord. Subject to Landlord's obligation to timely deliver an invoice therefor in accordance with the terms of this Section, if the total of such remittances is less than Tenant's Share of Taxes actually due for such Tax Period, Tenant shall pay the difference to Landlord, as Additional Rent hereunder, within thirty (30) days of Tenant's receipt of a reasonably detailed invoice therefor. Landlord's estimate for the next Tax Period shall be based upon actual Taxes for the prior Tax Period plus a reasonable adjustment based upon estimated increases in Taxes. Upon Tenant's request, Landlord shall furnish Tenant with copies of the applicable Tax bills. Payment for any taxes owed on any equipment or personal property owned or leased by Tenant is the sole responsibility of Tenant and said taxes will not be invoiced or collected by Landlord. The provisions of this Section 5.3(c) shall survive the expiration or earlier termination of this Lease.

(d) **Effect of Abatements**. Tenant shall have the right to contest the amount or validity of assessed valuation of the Premises for any Tax Period at Tenant's sole cost and expense, provided however, prior to the commencement of any such contest Tenant shall coordinate any such contest with any other Building tenants that occupy assessed premises within the Building. Tenant shall receive a credit against Taxes (or a refund if the Term has been terminated or expired) in the amount of Tenant's Share of Taxes for any refund obtained by reason of a reduction in any Taxes by the assessors or the administrative, judicial or other governmental agency responsible therefor.

(e) **Part Years**. If the Rent Commencement Date or the Expiration Date occurs in the middle of a Tax Period, Tenant shall be liable for only that portion of the Taxes, as the case may be, with respect to such Tax Period within the Term.

5.4 Late Payments.

(a) Any payment of Rent due hereunder not paid when due shall bear interest for each month or fraction thereof from the due date until paid in full at the annual rate of eight percent (8%), or at any applicable lesser maximum legally permissible rate for debts of this nature (the "**Default Rate**"). Notwithstanding the foregoing, Tenant shall be entitled to a grace period of five (5) Business Days after written notice from Landlord with respect to the first two (2) late payments in any twelve (12) month period.

(b) Additionally, if Tenant fails to make any payment within five (5) Business Days after the due date therefor, Landlord may charge Tenant a fee, which shall constitute liquidated damages, equal to three (3%) of any such late payment.

(c) For each Tenant payment check to Landlord that is returned by a bank for any reason, Tenant shall pay a returned check charge equal to the amount as shall be customarily charged by Landlord's bank at the time.

(d) Money paid by Tenant to Landlord after an Event of Default shall be applied to Tenant's account in the following order: first, to any unpaid Additional Rent, including without limitation late charges, returned check charges, legal fees and/or court costs chargeable to Tenant hereunder; and then to unpaid Base Rent.

(e) The parties agree that the late charge referenced in Section 5.4(b) represents a fair and reasonable estimate of the costs that Landlord will incur by reason of any late payment by Tenant, and the payment of late charges and interest are distinct and separate in that the payment of interest is to compensate Landlord for the use of Landlord's money by Tenant, while the payment of late charges is to compensate Landlord for Landlord's processing, administrative and other costs incurred by Landlord as a result of Tenant's delinquent payments. Acceptance of a late charge or interest shall not constitute a waiver of Tenant's default with respect to the overdue amount or prevent Landlord from exercising any of the other rights and remedies available to Landlord under this Lease or at law or in equity now or hereafter in effect.

5.5 No Offset; Independent Covenants; Waiver. Rent shall be paid without notice or demand, and without setoff, counterclaim, defense, abatement, suspension, deferment, reduction or deduction, except as expressly provided herein. **TENANT WAIVES ALL RIGHTS (I) TO ANY ABATEMENT, SUSPENSION, DEFERMENT, REDUCTION OR DEDUCTION OF OR FROM RENT, AND (II) TO QUIT, TERMINATE OR SURRENDER THIS LEASE OR THE PREMISES OR ANY PART THEREOF, EXCEPT AS EXPRESSLY PROVIDED HEREIN. TENANT HEREBY ACKNOWLEDGES AND AGREES THAT THE OBLIGATIONS OF TENANT HEREUNDER SHALL BE SEPARATE AND INDEPENDENT COVENANTS AND AGREEMENTS, THAT RENT SHALL CONTINUE TO BE PAYABLE IN ALL EVENTS AND THAT THE OBLIGATIONS OF TENANT HEREUNDER SHALL CONTINUE UNAFFECTED, UNLESS THE REQUIREMENT TO PAY OR PERFORM THE SAME SHALL HAVE BEEN TERMINATED OR REDUCED PURSUANT TO AN EXPRESS PROVISION OF THIS LEASE. LANDLORD AND TENANT EACH ACKNOWLEDGES AND AGREES THAT THE INDEPENDENT NATURE OF THE OBLIGATIONS OF TENANT HEREUNDER REPRESENTS FAIR, REASONABLE, AND ACCEPTED COMMERCIAL PRACTICE WITH RESPECT TO THE TYPE OF PROPERTY SUBJECT TO THIS LEASE, AND THAT THIS AGREEMENT IS THE PRODUCT OF FREE AND INFORMED NEGOTIATION DURING WHICH BOTH LANDLORD AND TENANT WERE REPRESENTED BY COUNSEL SKILLED IN NEGOTIATING AND DRAFTING COMMERCIAL LEASES**.

5.6 Survival. Any obligations under this Article 5 which shall not have been paid at the expiration or earlier termination of the Term shall survive such expiration or earlier termination for a period of two (2) years and shall be paid when and as the amount of same shall be determined and be due.

6. RIGHT OF FIRST OFFER

6.1 ROFO Rights. If at any time between the Execution Date and the date which is twelve (12) months prior to the Expiration Date, any separately demised rentable area within the Building, Suites 8066, 8076 and 8078 in Building D (the "**Building D ROFO Space**") or Suite 8040 in Building C on the Campus (each such area, a "**ROFO Space**") has become "available for leasing" (as hereinafter defined), and provided that the conditions precedent set forth in 6.3 below are then satisfied, then prior to offering to lease such ROFO Space to any third parties, Landlord shall deliver notice thereof to Tenant (the "**ROFO Notice**") setting forth a description of the ROFO Space in question (including the rentable area thereof), the Landlord's determination of Base Rent and Additional Rent for such ROFO Space, the other material business terms upon which Landlord is willing to lease the ROFO Space, and the date Landlord anticipates that the ROFO Space will become available for leasing. As soon as is reasonably possible, and in no event more than seven (7) Business Days following delivery of the ROFO Notice, Landlord shall make arrangements for Tenant to tour the applicable ROFO Space. Provided that all of the conditions precedent set forth in this Article 6 are fully satisfied by Tenant, Tenant shall have the option (the "**ROFO Option**"), exercisable by Tenant delivering written notice (the "**Acceptance Notice**") to Landlord within fifteen (15) Business Days after delivery by Landlord of the ROFO Notice, to lease all of the subject ROFO Space upon all of the terms and conditions set forth in the ROFO Notice, including the Base Rent and Additional Rent for the ROFO Space designated by Landlord as set forth therein. Time shall be of the essence as to Tenant's delivery of an Acceptance Notice with respect to any ROFO Space. If Tenant fails to deliver an Acceptance Notice within such fifteen (15) Business Day period, then Tenant shall be deemed to have rejected the option to lease the applicable ROFO Space (the "**Rejected ROFO Space**"). In such event, Tenant shall have no further rights or claims with respect to the Rejected ROFO Space (except as set forth in Section 6.6), Landlord shall have no further liabilities or obligations to Tenant with respect to the Rejected ROFO Space, and Landlord may elect to lease the Rejected ROFO Space to third parties upon such terms and conditions as Landlord may determine in its discretion.

6.2 Available for Leasing, etc. For purposes of this Article 6, space shall be deemed "available for leasing" when (a) the space is vacant, or (b) the respective existing tenant or occupant does not intend to extend or renew the term of its lease or other occupancy agreement for the ROFO Space or to enter into a new lease for such ROFO Space. For purposes of this Article 6, space shall not be deemed "available for leasing" if, at the time in question (x) any person or entity leases or occupies the ROFO Space, whether pursuant to a lease or other agreement (unless such person or entity confirms to the satisfaction of Landlord that it does not intend to extend or renew the term of the lease or other occupancy agreement for the ROFO space or enter into a new lease for such ROFO Space), (y) any person or entity holds any option or right to extend or renew its lease or right(s) of occupancy with respect to such ROFO Space, or (z) Landlord intends to occupy the ROFO Space, or to lease or otherwise permit the occupancy of the ROFO Space by an affiliate or subsidiary of Landlord. In addition, the Building D ROFO Space shall not be "available for leasing" in the event Landlord intends to lease or otherwise permit the occupancy of the Building D ROFO Space by a tenant or other occupant with which Landlord has entered into a contractual research or clinical relationship. Without limitation, so long as a tenant or other occupant leases or occupies all or a portion of the ROFO Space, Landlord shall be free to extend or renew any such tenancy or occupancy, whether or not pursuant to a lease or other agreement, and such space shall not be deemed to be "available for leasing." Nothing set forth in this Section 6.2 shall be construed to limit Landlord's right to keep space in the Building vacant if Landlord elects, in its sole discretion, to do so, and such vacant space shall in no event be deemed to be "available for leasing" hereunder. Landlord represents and warrants to Tenant that the ROFO Space is not subject to any existing rights of first offer or other expansion rights or options of other tenants.

6.3 No Event of Default. Tenant shall have no right to exercise any ROFO Option or to lease any ROFO Space, and Landlord shall have no obligation to deliver a ROFO Notice, if an Event of Default exists on the date the respective space becomes available for leasing or on the date of the Acceptance Notice.

6.4 Terms. Effective as of the date on which Landlord delivers the ROFO Space to Tenant (the "**ROFO Space Commencement Date**"):

(i) The ROFO Space shall be added to and be deemed to be a part of the Premises for all purposes under this Lease and on all of the terms and conditions of this Lease (except as otherwise provided in this Article 6), including, without limitation, Tenant's Termination right set forth in Section 3.3 of this Lease (except that Tenant must deliver a Termination Notice by not later than thirty (30) days following the ROFO Space Commencement Date);

(ii) The ROFO Space shall be delivered in the Delivery Condition; Landlord shall not be obligated to perform any work or improvements or to provide any allowances or inducements with respect thereto;

(iii) Base Rent and Additional Rent for the ROFO Space shall be as set forth in the ROFO Notice;

(iv) Tenant shall pay all Additional Rent payable under this Lease with respect to the applicable ROFO Space, except to the extent that any such Additional Rent is included in the amounts payable under clause (iii) above; and

(v) If the Acceptance Notice for the applicable ROFO Space is delivered prior to the date which is two (2) years before the Expiration Date, then the term of the leasing of the ROFO Space shall be the Expiration Date; and, if the Acceptance Notice for the applicable ROFO Space is delivered on or after the date which is two (2) years before the Expiration Date, then the term of the leasing of the ROFO Space shall be as set forth in the ROFO Notice.

6.5 Amendment. The delivery of the Acceptance Notice by Tenant shall constitute the irrevocable and unconditional acceptance by Tenant of the offer to lease the ROFO Space upon all of the terms and conditions set forth in the ROFO Notice. Without limitation, if Tenant timely delivers an Acceptance Notice and exercises the ROFO Option, upon request made by either party, Landlord and Tenant will execute, acknowledge and deliver an amendment to this Lease (or, upon mutual agreement of Landlord and Tenant, a new lease on the same form as this Lease) confirming the ROFO Space Commencement Date, Base Rent and Additional Rent payable with respect to the ROFO Space, the incorporation of the ROFO Space into the Premises, and the modifications to this Lease resulting therefrom, as set forth in Section 6.4; provided, however, as long as the conditions set forth in Section 6.3 are satisfied, the timely delivery of an Acceptance Notice after receipt of the ROFO Notice shall be the automatic and self-operative exercise of the ROFO Option and the failure of either party to execute and deliver such an amendment shall not detract from the exercise by Tenant of the ROFO Option. Notwithstanding the foregoing, Tenant acknowledges and agrees that its exercise of any ROFO Option hereunder is subject to approval by the Board, if and to the extent such approval is required in accordance with the standard rules, regulations and procedures of the Board of general applicability to lease transactions, consistently applied.

6.6 Reoffer of ROFO Space to Tenant. The ROFO Option of Tenant hereunder with respect to each respective ROFO Space shall terminate and expire on the earlier to occur of (a) as provided in Section 6.1 above, Tenant's failure to deliver an Acceptance Notice within the fifteen (15) Business Day period of time set forth above, or (b) as provided in Section 6.3 above, the date Landlord would have provided Tenant a ROFO Notice if there had not been an Event of Default, as set forth in Section 6.3 above. Notwithstanding the foregoing, if (i) Tenant was entitled to exercise its ROFO Option but failed to deliver an Acceptance Notice within the (15) Business Day period, and (ii) thereafter prior to entering into a lease (or leases) for such ROFO Space either (x) Landlord proposes to lease the respective ROFO Space to a prospective tenant on terms that are "materially more favorable" than those set forth in the ROFO Notice previously delivered to Tenant, or (y) Landlord does not enter into a lease for the respective ROFO Space within a period of twelve (12) months following the date of the ROFO Notice, then Tenant's rights shall be revived and Tenant shall once again have a ROFO Option with respect to the respective ROFO Space. For purposes hereof, the terms offered to a prospective tenant shall be deemed to be "materially more favorable" from those set forth in the ROFO Notice if there is a reduction of more than five percent (5%) in the "bottom line" cost per rentable square foot of the ROFO Space to the prospective tenant, when compared with the "bottom line" cost per rentable square foot for the ROFO Space under the ROFO Notice, determined by considering all of the economic terms of both proposals, respectively, including, among other relevant factors, the base rent, the tax and expense escalation, the additional rent, any free rent periods, and any other concessions and allowances.

6.7 Expiration. Notwithstanding any provision contained herein to the contrary, from and after the earliest to occur of (i) the expiration or earlier termination of the 2019 R&D Agreement, (ii) the date on which (A) Tenant has exercised ROFO Options with respect to 22,000 rentable square feet or more of the ROFO Space in the aggregate, and (B) this Lease has been amended in writing to include all such ROFO Space, or (iii) the date which is twelve (12) months prior to the Expiration Date, then this Article 6 shall become null and void and of no further force or effect and Tenant shall have no further ROFO Options or other rights to lease any ROFO Space pursuant to this Article 6. In such event, all of the obligations of Landlord to offer any ROFO Space to Tenant shall be considered to have been fully and completely satisfied, and neither Landlord nor Tenant shall have any further rights, liabilities or obligations under this Article 6.

7. INTENTIONALLY OMITTED.

8. INTENTIONALLY OMITTED.

9. UTILITIES, LANDLORD'S SERVICES

9.1 Electricity. Tenant shall contract with the utility provider for electric service to the Premises. Commencing on the Commencement Date, Tenant shall pay all charges for electricity furnished to the Premises, and any equipment exclusively serving the Premises, directly to the utility company, based on the submeter(s) currently installed in the Premises. Tenant shall, at Tenant's sole cost and expense, install (to the extent not already installed), maintain and keep in good order, condition and repair the metering equipment used to measure electricity furnished to the Premises and any equipment exclusively serving the same.

9.2 Water. Landlord shall contract with the applicable utility provider for water and sewer service to the Premises, and shall pay all charges for water and sewer service furnished to the Premises, all at Landlord's sole cost and expense.

9.3 Gas. Landlord shall contract with the applicable utility provider for gas service to the Premises, and shall pay all charges for gas service furnished by the utility provider to the Premises, all at Landlord's sole cost and expense.

9.4 Other Utilities. Subject to Landlord's reasonable rules and regulations governing the same, Tenant shall obtain and pay, as and when due, for all other utilities and services consumed in and/or furnished to the Premises, together with all taxes, penalties, surcharges and maintenance charges pertaining thereto.

9.5 Interruption or Curtailment of Utilities.

(a) When necessary by reason of accident or emergency, or for repairs, alterations, replacements or improvements which in the reasonable judgment of Landlord are desirable or necessary to be made and are made in accordance with the other terms and conditions of this Lease, Landlord reserves the right, upon as much prior notice to Tenant as is practicable under the circumstances and no less than five (5) Business Days' notice except in the event of an emergency, to temporarily interrupt, curtail, or stop (i) the furnishing of hot and/or cold water, and (ii) the operation of the plumbing and electric systems. With respect to any planned interruption, Landlord shall consult with Tenant to schedule such interruption in an effort to minimize interference with Tenant's business operations. With respect to any planned interruption of more than ten (10) minutes, Landlord shall perform the same after Normal Business Hours to the extent reasonably practicable in good faith except in the event of an emergency. Landlord shall exercise reasonable diligence to eliminate the cause of any such interruption, curtailment, stoppage or suspension, but, subject to Section 9.5(b) below, there shall be no diminution or abatement of Rent or other compensation due from Landlord to Tenant hereunder, nor shall this Lease be affected or any of Tenant's obligations hereunder reduced, and Landlord shall have no responsibility or liability for any such interruption, curtailment, stoppage, or suspension of services or systems.

(b) Notwithstanding anything to the contrary in this Lease contained, if the Premises are rendered untenantable, in whole or part, due to the failure of Landlord to provide any service required to be provided by Landlord under this Lease (including, without limitation, access or egress, and repair and maintenance of the foundation and Building structure in accordance with Section 10.2), or if Tenant's use and occupancy of the Premises or any part thereof shall be disturbed in violation of Article 23 hereof (thereby rendering the Premises or a portion thereof substantially untenantable) (either of the foregoing, a "**Material Services Failure**") such that, for the duration of the Landlord Service Interruption Cure Period (hereinafter defined), the continued operation in the ordinary course of Tenant's business in any portion of the Premises is materially and adversely affected, and if Tenant ceases to use the affected portion of the Premises in the ordinary course (the "**Affected Portion**") during the period of untenantability as the direct result of such Material Services Failure, then, provided that Landlord's inability to cure such condition is not caused by the negligence or willful misconduct of any of the Tenant Parties, Base Rent and Tenant's obligation to pay Additional Rent on account of Taxes shall be equitably abated from and after the event giving rise to such interruption until the day such condition is completely corrected. For purposes hereof, the "**Landlord Service Interruption Cure Period**" shall be defined as three (3) consecutive Business Days after written notice from Tenant identifying the condition causing untenantability in the Affected Portion (the "**Interruption Notice**"). In the event that a Material Services Failure materially and adversely interferes with Tenant's use of at least 25% of the Premises (as measured in rentable square feet) for a period of thirty (30) consecutive days after the Interruption Notice, then provided that Landlord's inability to cure such condition is not caused by the negligence or willful misconduct of any of the Tenant Parties, Tenant may elect to terminate this Lease by giving ten (10) days' prior written notice to Landlord, provided that this Lease shall remain in full force and effect, and such termination notice shall be null and void, if the Material Services Failure is remedied within such 10-day period. The provisions of this Section 9.5(b) shall not apply in the event of Casualty or Taking (which shall be governed by Article 15 below).

9.6 Landlord's Services. Landlord shall provide the services described in Exhibit 4 attached hereto and made a part hereof in a professional manner ("**Landlord's Services**").

9.7 Telecommunications Providers. Landlord shall not unreasonably withhold, condition or delay its approval of access by any particular telecommunications service provider to the Building or to Premises. If Landlord permits such access, Landlord may condition such access upon (a) the execution of a commercially reasonable telecommunications agreement (which shall require the payment of fair market rent for any space in the Property dedicated, licensed and/or leased to such provider except that no such rent shall be payable for space in common utility closets or shafts/risers), and (b) after the Term Commencement Date, the payment to Landlord by Tenant or the service provider of any reasonable third party costs incurred by Landlord in facilitating such access.

10. MAINTENANCE AND REPAIRS

10.1 Maintenance and Repairs by Tenant. Tenant shall maintain, repair and keep free of insects, rodents, vermin and other pests and in compliance with all applicable Legal Requirements: the Premises (except as set forth in Section 10.2 below), including without limitation the entire interior of the Premises (except as set forth in Section 10.2 below), all electronic, phone and data cabling and related equipment (other than building service equipment) that is installed by or for the exclusive benefit of the Tenant (whether located in the Premises or other portions of the Building), all fixtures, equipment and specialty lighting therein, any supplemental HVAC and humidification equipment exclusively serving the Premises, electrical equipment wiring, doors, non-structural walls, windows and floor coverings, and all Building systems and equipment that are located in or exclusively serve the Premises, including, without limitation, equipment critical to laboratory operations, and HVAC and fire and life safety systems located in the Premises.

10.2 Maintenance and Repairs by Landlord. Except as otherwise provided in Section 15, and subject to Tenant's obligations in Section 10.1 above, Landlord shall keep, maintain, repair and operate and, as necessary, replace, (a) in acceptable working order and condition, consistent with the representations made in Section 3.1, and in compliance with all applicable Legal Requirements, and in a manner necessary to provide the services required of Landlord hereunder: the Building foundation, and (b) in good working order and condition, and in compliance with all applicable Legal Requirements, and in a manner necessary to provide the services required of Landlord hereunder: the roof, Building structure, and the common mechanical systems and utilities serving the Building and Premises (including, without limitation electrical, plumbing, life safety and other systems) to the point where they are stubbed to the Premises, the exterior windows and walls, the structural floor slabs and columns, and the Parking Lot and Common Areas.

10.3 Intentionally Omitted.

10.4 Floor Load—Heavy Equipment. Tenant shall not place a load upon any floor of the Premises exceeding the floor load per square foot of area which such floor was designed to carry and which is allowed by Legal Requirements. Landlord reserves the right to reasonably approve the position of all safes, heavy machinery, heavy equipment, freight, bulky matter or fixtures (collectively, "**Heavy Equipment**"), which shall be placed so as to distribute the weight. Heavy Equipment shall be placed and maintained by Tenant at Tenant's expense in settings sufficient in Landlord's reasonable judgment to absorb and prevent vibration, noise and annoyance, Landlord hereby agreeing that the Fit Plan of Tenant's Initial Work, and, if applicable, Landlord's approval (or deemed approval) of the Final Construction Drawings, shall be deemed Landlord's approval with respect to the position and settings of Heavy Equipment installed as part of Tenant's Work. Subject to the provisions of Section 14.6, any moving of Heavy Equipment shall be at the sole risk and hazard of Tenant and Tenant will defend, indemnify and save Landlord and Landlord's agents (including without limitation its property manager), contractors and employees (collectively with Landlord, the "**Landlord Parties**") harmless from and against any and all third party claims, damages, losses, penalties, costs, expenses and fees (including without limitation reasonable legal fees) for personal injury or property damage (collectively, "**Claims**") resulting directly or indirectly from such moving, except to the extent resulting from the negligence or willful misconduct of Landlord or the Landlord Parties.

10.5 Premises Cleaning. Tenant shall be responsible, at its sole cost and expense, for janitorial and removing trash from the Premises to the common dumpster designated by Landlord and for providing biohazard disposal services for the Premises, including the laboratory areas thereof. Such services shall be performed by licensed (where required by law or governmental regulation), insured and qualified contractors and on a sufficient basis to ensure that the Premises are at all times kept neat and clean. Landlord shall provide a dumpster and/or compactor on the Campus and within a reasonable proximity to the Building for Tenant's disposal of non-hazardous and non-controlled substances.

10.6 Pest Control. Tenant, at Tenant's sole cost and expense, shall cause the Premises to be exterminated on a monthly basis and shall cause all portions of the Premises used for the storage, preparation, service or consumption of food or beverages to be cleaned daily, and to be treated against infestation by insects, rodents and other vermin and pests whenever there is evidence of any infestation.

11. ALTERATIONS AND IMPROVEMENTS BY TENANT

11.1 Landlord's Consent Required.

(a) Tenant shall not make any alterations, decorations, installations, removals, additions or improvements (collectively with Tenant's Work, "**Alterations**") in or to the Premises without Landlord's prior consent, such consent not to be unreasonably withheld, conditioned or delayed; provided however, Landlord's prior consent shall not be required with respect to any Alterations which (1) do not materially and adversely affect the Common Areas, (2) do not materially and adversely affect the proper functioning of any Building system, (3) do not materially and adversely impact the structure of the Buildings, and (4) comply with applicable Legal Requirements. Tenant shall be responsible for all elements of the design of Tenant's plans (including, without limitation, compliance with Legal Requirements, functionality of design, the structural integrity of the design, the configuration of the Premises and the placement of Tenant's furniture, appliances and equipment), and Landlord's approval, if any, of Tenant's plans shall in no event relieve Tenant of the responsibility for such design. Landlord's approval shall not be understood as being Landlord's assessment of the adequacy of the design of Tenant's plans for any purpose (including, without limitation, compliance with Legal Requirements, functionality of design, the structural integrity of the design, the configuration of the Premises and the placement of Tenant's furniture, appliances and equipment). Landlord shall have no liability or responsibility for any claim, injury or damage alleged to have been caused by the particular materials (whether building standard or non-building standard), appliances or equipment selected by Tenant in connection with any work performed by or on behalf of Tenant. Landlord may elect, not later than the time of Landlord's approval thereof (or as soon as reasonably possible and in any event within thirty (30) days after receipt of reasonably detailed notice regarding any Alterations, provided that Landlord shall notify Tenant within seven (7) Business Days if Landlord is considering requiring Tenant to remove such Alterations), to require Tenant at the expiration or sooner termination of the Term to remove any Alterations for which Landlord's approval is required hereunder and which are reasonably determined by Landlord to be inconsistent with customary laboratory, office, research and development and manufacturing use standards in Houston and to restore the Premises to substantially the same condition as existed immediately prior to such Alterations. Tenant shall provide Landlord with reproducible record drawings (in CAD format) of all material completed Alterations within sixty (60) days of Landlord's request.

(b) In the event Landlord's approval is required pursuant to Section 11.1(a) above, or Tenant otherwise elects to request Landlord's approval, Landlord shall not unreasonably withhold or condition its approval of plans and specifications submitted by Tenant and shall respond to the request of Tenant for such approval within ten (10) Business Days after receipt thereof. If Landlord disapproves said plans and specifications, then concurrent therewith Landlord will specify in writing the reason(s) for such disapproval with sufficient specificity so as to allow Tenant to make such changes as Landlord may reasonably require. If Landlord does not respond to a request for approval of such Plans within said ten (10) Business Day period of time, then Tenant may elect to submit an Alteration Reminder Notice (as hereinafter defined) to Landlord and if Landlord does not respond to the Alteration Reminder Notice within five (5) Business Days after receipt thereof, then the proposed Alterations shown on said plans and specifications shall be considered to have been approved by Landlord. An "**Alteration Reminder Notice**" shall mean a written notice delivered by Tenant to Landlord stating the following in capitalized and bold type prominently on the top of the first page of such notice: **"THIS NOTICE IS AN ALTERATION REMINDER NOTICE DELIVERED UNDER THE LEASE. IF LANDLORD DOES NOT RESPOND TO THE PROPOSED PLANS WITHIN FIVE (5) BUSINESS DAYS AFTER RECEIPT OF THIS NOTICE, THEN LANDLORD WILL BE CONSIDERED TO HAVE APPROVED OF THE PROPOSED ALTERATIONS SHOWN ON THE PREVIOUSLY DELIVERED PLANS AND SPECIFICATIONS."**

11.2 Liens. Any mechanic's lien filed against the Premises or the Building for work claimed to have been done for, or materials claimed to have been furnished to, Tenant shall be bonded over or discharged by Tenant within ten (10) Business Days after Tenant receives notice thereof, at Tenant's expense.

11.3 General Requirements. Unless Landlord and Tenant otherwise agree in writing, Tenant shall (a) procure or cause others to procure on its behalf all necessary permits before undertaking any Alterations in the Premises (and provide copies thereof to Landlord), provided that Landlord shall reasonably cooperate with Tenant in order for Tenant to obtain such permits; and (b) perform all of such Alterations in a good and workmanlike manner, employing materials of good quality and in compliance with the Rules and Regulations, all insurance requirements of this Lease, and Legal Requirements.

11.4 Remaining Funds. Following Tenant's completion of Tenant's Work, Tenant may submit applications with respect to any future Alterations, and Landlord shall pay and/or credit such applications out of any Remaining Funds in the same manner as Tenant's Work Costs, as set forth in Section I(4) of Exhibit 3.

12. SIGNAGE

12.1 Restrictions. Tenant shall have the right to install Building standard signage identifying Tenant's business at the entrance and lobby to the Premises, which signage shall be subject to Landlord's prior written consent, not be unreasonably withheld, conditioned or delayed.

12.2 Exterior Signage.

(a) Intentionally Omitted.

(b) Façade Signage.

(i) Tenant shall have the right to install, at Tenant's cost and expense, Tenant's signage on the exterior façade of the Building ("**Tenant's Façade Signage**" and, together with Tenant's Monument Signage, "**Tenant's Exterior Signage**"), in each case during the initial Term of the Lease, and any extensions thereof, subject to the provisions of this Section 12.2.

(ii) Façade Signage Conditions and Obligations. Tenant's right to maintain Tenant's Façade Signage is subject to the following conditions and obligations: (i) Tenant's Façade Signage shall be subject to the prior written approval of Landlord as to location, size, materials, manner of attachment and appearance of Tenant's Façade Signage, and the materials, design, lighting and method of installation of Tenant's Façade Signage, which approval shall not be unreasonably withheld, conditioned or delayed, (ii) Tenant's Façade Signage shall comply with all Legal Requirements (and Tenant shall have obtained any necessary permits prior to installing Tenant's Façade Signage), (iii) Tenant shall have obtained all governmental permits and approvals required in connection therewith, (iv) the maintenance and removal of such Tenant's Façade Signage (including, without limitation, the repair and cleaning of the existing monument façade and exterior of the Building, as applicable, upon removal of Tenant's Façade Signage) shall be performed at Tenant's sole cost and expense, subject to and in accordance with the terms and conditions governing Alterations pursuant to Article 11 hereof, (v) Tenant's Façade Signage shall be subject to Landlord's reasonable regulations, and (vi) Tenant shall have the right, from time to time throughout the Term of this Lease, to replace the Tenant's Façade Signage (if any) with signage which is equivalent to the signage being replaced, subject to all of the terms and conditions of this Section 12.2.

13. ASSIGNMENT, MORTGAGING AND SUBLETTING

13.1 Landlord's Consent Required. Except as expressly otherwise set forth herein (including, without limitation, as set forth in Section 13.4 below), Tenant shall not, without Landlord's prior written consent, such consent to be withheld in Landlord's sole discretion, assign or sublet this Lease or the Premises in whole or in part (each of the foregoing, a "**Transfer**"). Landlord shall promptly either grant or deny consent to any Transfer proposed by Tenant hereunder, in no event more than fifteen (15) days following receipt of Tenant's request thereof. Any purported Transfer made without Landlord's consent, if required hereunder, shall be void and confer no rights upon any third person, provided that if there is a Transfer, Landlord may collect rent from the transferee without waiving the prohibition against Transfers, accepting the transferee, or releasing Tenant from full performance under this Lease. No Transfer shall relieve Tenant of its primary obligation as party Tenant hereunder, nor shall it reduce or increase Landlord's obligations under this Lease.

13.2 Profits In Connection with Transfers. Except with respect to Transfers permitted in accordance with the terms of Section 13.4 below, Tenant shall, within thirty (30) days of receipt thereof, pay to Landlord fifty percent (50%) of any rent, sum or other consideration to be paid or given in connection with any Transfer, either initially or over time, after deducting reasonable actual out-of-pocket legal, brokerage and other transaction expenses incurred or to be incurred by Tenant in connection therewith (including, without limitation, tenant improvements and rent concessions), in excess of Rent hereunder as if such amount were originally called for by the terms of this Lease as Additional Rent.

13.3 Prohibited Transfers. Notwithstanding any contrary provision of this Lease, Tenant shall have no right to make a Transfer unless on both (i) the date on which Tenant notifies Landlord of its intention to enter into a Transfer and (ii) the date on which such Transfer is to take effect, there is no Event of Default under this Lease.

13.4 Exceptions to Requirement for Consent; Exceptions to Landlord's Sole Discretion.

(a) Notwithstanding anything to the contrary herein contained, each of the following shall not require Landlord's consent: (i) mergers or consolidations of Tenant with another entity, provided that the resulting entity following such merger or consolidation is the initial Tenant under this Lease (or such successor or assign permitted in accordance with the terms and conditions of this Article 13), (ii) the issuance, transfer or acquisition of ownership interests in Tenant, including, without limitation, the sale, issuance or acquisition of stock in Tenant, or (iii) the sublease of all or any portion of the Premises to any corporation or business entity which is related (i.e., an entity for which Tenant has at least a 10% ownership interest), controls, is controlled by, or is under common control with Tenant (or such successor or assign permitted in accordance with the terms and conditions of this Article 13).

(b) Notwithstanding anything to the contrary herein contained, Landlord shall not unreasonably withhold, condition or delay its consent to any of the following Transfers: (i) mergers or consolidations of Tenant with another entity where the resulting entity following such merger or consolidation is not the initial Tenant under this Lease (or such successor or assign permitted in accordance with the terms and conditions of this Article 13), and (ii) the transfer of all or substantially all of Tenant's assets to another business entity (except as set forth in Section 13.4(a)(ii) above), provided such transfer was made for a legitimate independent business purpose and not for the sole purpose of transferring this Lease.

13.5 Denial of Consent; Recapture of Premises. In the event Landlord denies consent to any Transfer proposed by Tenant (excepting only if such denial is in accordance with the terms of Section 13.3 above), then upon notice to Landlord not more than thirty (30) days following the date on which Tenant receives Landlord's notice denying consent to such sublease or assignment, Tenant may elect to terminate this Lease with respect to the portion of the Premises Tenant proposed to sublease, or with respect to the entire Lease in the event Tenant proposed to assign this Lease, such termination to be effective as of the date set forth in such notice to Landlord (but not later than nine (9) months following the effective date of such Transfer). In the event of Landlord's denial of an assignment of this Lease and Tenant's timely termination in accordance with the foregoing, Tenant (or such assignee) shall be permitted to occupy the Premises, subject to and in accordance with the terms and conditions of this Lease, during the period prior to the effective date of the termination of this Lease (not to exceed such nine (9) month period set forth above). Following any such recapture of the Premises, and promptly following the request of Landlord or Tenant, the parties shall enter into an amendment of this Lease memorializing such termination; provided, however, the timely delivery of such termination notice shall be the automatic and self-operative exercise of such recapture, and the failure of either party to execute and deliver such an amendment shall not detract from the exercise by Tenant of such termination.

14. INSURANCE; INDEMNIFICATION; EXCULPATION

14.1 Liability. Except to the extent arising from the negligence or willful misconduct of Landlord or any Landlord Parties, or any breach of this Lease by Landlord, and subject to Section 14.6 below, Tenant shall be fully responsible and liable for any and all demands, claims, suits, damages, losses, liabilities, costs and expenses of any nature whatsoever (including, but not limited to, property damage and loss, bodily injuries, sickness, disease or death) sustained or occurring in the Premises. The provisions of this paragraph shall survive the expiration or termination of this Agreement.

14.2 Tenant's Insurance.

(a) Tenant shall procure, pay for and keep in force throughout the Term (and for so long thereafter as Tenant remains in occupancy of the Premises) Commercial General Liability, Statutory Workers' Compensation, and Employer's Liability insurance. The Workers' Compensation and Employer's Liability policies must have limits of not less than $1,000,000 each accident, each employee, and policy limit. The Workers' Compensation policy shall provide a waiver of subrogation in favor of Landlord Parties. The commercial general liability insurance will insure Tenant on an occurrence basis against all claims and demands for personal injury liability (including, without limitation, bodily injury, sickness, disease, and death) or damage to property which may be claimed to have occurred from and after the time any of the Tenant Parties shall first enter the Premises, with limits of not less than One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) in the aggregate annually. The commercial general liability policy shall include a limit of not less than $300,000 for Damage to Premises Rented to You. Tenant shall also carry umbrella liability coverage with limits of not less than Five Million Dollars ($5,000,000). Such policy shall also include contractual liability coverage covering Tenant's liability assumed under this Lease. Such insurance policy(ies) shall be endorsed and name the Board of Regents of The University of Texas System (the "**Board**"), The University of Texas System, The University of Texas M. D. Anderson Cancer Center ("**MD Anderson**"), and officers and employees of The University of Texas System and MD Anderson as additional insureds.

(b) Tenant shall take out and maintain throughout the Term a policy of fire, vandalism, malicious mischief, extended coverage and so-called "Causes of Loss—Special" coverage insurance in an amount equal to one hundred percent (100%) of the replacement cost insuring (i) all items or components of Alterations (collectively, the "**Tenant-Insured Improvements**"), and (ii) all of Tenant's furniture, equipment, fixtures and property of every kind, nature and description related or arising out of Tenant's leasehold estate hereunder, which may be in or upon the Premises or the Building, excluding retaining walls, paved or concrete surfaces, and foundations or supports below the surface of the lowest floor or basement but including without limitation Tenant's Rooftop Equipment (collectively, "**Tenant's Property**"). The insurance required to be maintained by Tenant pursuant to this Section 14.2(b) (referred to herein as "**Tenant Property Insurance**") shall insure the interests of both Landlord and Tenant as their respective interests may appear from time to time.

(c) During periods when Tenant's Work and/or any Alterations are being performed, Tenant shall maintain, or cause to be maintained, so-called all risk or cause of loss special property insurance or its equivalent and/or builders risk insurance on 100% replacement cost coverage basis, including hard and soft costs coverages. Such insurance shall protect and insure Landlord, Tenant and Tenant's contractors, as their interests may appear, against loss or damage by fire, water damage, vandalism and malicious mischief, and such other risks as are customarily covered by so-called all risk or special cause of loss property / builders risk coverage or its equivalent.

(d) Tenant shall procure and maintain at its sole expense such additional insurance as may be necessary to comply with any Legal Requirements.

(e) Tenant shall cause all contractors and subcontractors to maintain during the performance of any Alterations the insurance described in Exhibit 6 attached hereto.

(f) The insurance required pursuant to Sections 14.1(a), (b), (c), (d) and (e) (collectively, "**Tenant's Insurance Policies**") shall be effected with insurers approved by Landlord, with a rating of not less than "A-XI" in the current *Best's Insurance Reports*, and authorized to do business in the State of Texas under valid and enforceable policies. Tenant's Insurance Policies may include deductibles in an amount no greater than the greater of $50,000 or commercially reasonable amounts, which will be paid by Tenant. On or before the date on which any of the Tenant Parties shall first enter the Premises and thereafter not less than fifteen (15) days prior to the expiration date of each expiring policy, Tenant shall deliver to Landlord at the contact below certificates evidencing Tenant's Insurance Policies issued by the respective insurers setting forth in full the provisions thereof together with evidence satisfactory to Landlord of the payment of all premiums for such policies. Upon request of Landlord, Tenant shall deliver to any Mortgagee copies of the foregoing documents.

Certificates of Insurance and Additional Insured Endorsements will be mailed, faxed, or emailed to the following Landlord contact:

Name:	The University of Texas M. D. Anderson Cancer Center – Real Estate
Address:	P.O. Box 301439, FHB – Unit 717, Houston, Texas 77230-1439
Facsimile Number:	(713) 792-1093
Email Address:	aeross@mdanderson.org

(g) Tenant's insurance will be primary to any insurance carried or self-insurance program established by MD Anderson, Board, or The University of Texas System.

14.3 Indemnification.

(a) Except to the extent caused by the negligence or willful misconduct of any of the Landlord Parties, Tenant shall, subject to Section 14.6 below, defend, indemnify and save the Landlord Parties harmless from and against any and all Claims asserted by or on behalf of any person, firm, corporation or public authority arising from:

(i) Tenant's breach of any covenant or obligation under this Lease;

(ii) Any injury to or death of any person, or loss of or damage to property, sustained or occurring in the Premises; or

(iii) Any injury to or death of any person, or loss of or damage to property arising out of the use or occupancy of the Premises and resulting from the negligence or willful misconduct of any of the Tenant Parties.

(b) Except to the extent caused by the negligence or willful misconduct of any of the Tenant Parties, subject to Section 14.6 below, and to the maximum extent authorized by the laws of the State of Texas (including, without limitation, the Constitution of the State of Texas), Landlord shall defend, indemnify and save the Tenant Parties harmless from and against any and all Claims asserted by or on behalf of any person, entity or public authority arising from (i) Landlord's breach of any covenant or obligation under this Lease, or (ii) any injury to or death of any person, or loss of or damage to any property in or about the Property or Campus to the extent caused by the negligence or willful misconduct of any of the Landlord Parties.

14.4 Property of Tenant. Tenant covenants and agrees that, to the maximum extent permitted by Legal Requirements, all of Tenant's Property at the Premises shall be at the sole risk and hazard of Tenant, and that if the whole or any part thereof shall be damaged, destroyed, stolen or removed from any cause or reason whatsoever, no part of said damage or loss shall be charged to, or borne by, Landlord, except, subject to Section 14.6 hereof, to the extent such damage or loss is due to the negligence or willful misconduct of any of the Landlord Parties.

14.5 Limitation of Landlord's Liability for Damage or Injury. Landlord shall not be liable for any injury or damage to persons, animals or property resulting from fire, explosion, falling plaster, steam, gas, air contaminants or emissions, electricity, electrical or electronic emanations or disturbance, water, rain or snow or leaks from any part of the Building or from the pipes, appliances, equipment or plumbing works or from the roof, street or sub-surface or from any other place or caused by dampness, vandalism, malicious mischief or by any other cause of whatever nature, except, subject to Section 14.6, to the extent caused by or due to the negligence or willful misconduct of any of the Landlord Parties. Nothing in this Section 14.5 shall derogate or diminish Landlord's obligations under Section 10.2 above.

14.6 Waiver of Subrogation. Landlord (to the extent authorized by the Constitution and laws of the State of Texas) and Tenant each hereby waives on behalf of itself and its property insurers (none of which shall ever be assigned any such claim or be entitled thereto due to subrogation or otherwise) any and all rights of recovery, claim, action, or cause of action against the other (including the Board) and its agents, officers, servants, partners, shareholders, or employees (collectively, the "**Related Parties**") for any loss or damage that may occur to or within the Premises or the Building or any improvements thereto, or any personal property of such party therein which is insured against under any Property Insurance (as defined in Section 14.8) policy actually being maintained by the waiving party from time to time, even if not required hereunder, or which would be insured against under the terms of any Property Insurance policy required to be carried or maintained by the waiving party hereunder, whether or not such insurance coverage is actually being maintained, including, in every instance, such loss or damage that may be caused by the negligence of the other party hereto and/or its Related Parties. All Property Insurance policies shall be endorsed to provide a waiver of subrogation consistent with the foregoing provisions in favor of the Board, MD Anderson, and/or Tenant, as applicable.

14.7 Tenant's Acts—Effect on Insurance. Tenant shall not do or permit any Tenant Party to do any act or thing upon the Premises or elsewhere in the Building which will invalidate or be in conflict with any insurance policies covering the Building and the fixtures and property therein; and shall not do, or permit to be done, any act or thing upon the Premises which shall subject Landlord to any liability or responsibility for injury to any person or persons or to property by reason of any business or operation being carried on upon said Premises or for any other reason. Landlord acknowledging that the use of the Premises for the Permitted Uses, generally, shall not be deemed to result in a default under this Section 14.7.

14.8 Landlord's Insurance.

(a) Landlord shall carry at all times during the Term of this Lease: (i) commercial general liability insurance with respect to the Campus, Property and the Common Areas thereof in an amount not less than Five Million Dollars ($5,000,000) combined single limit per occurrence; provided that for so long as Landlord is an agency of the State of Texas, Landlord shall not be obligated to maintain the insurance coverage set forth this clause (i), and (ii) with respect to the Building, excluding Tenant-Insured Improvements and improvements made by other tenants or occupants, insurance against loss or damage caused by any peril covered under fire, extended coverage and all risk insurance with coverage against vandalism, malicious mischief and such other insurable hazards and contingencies as are from time to time normally insured against by owners of similar first class offices/research/laboratory buildings/campuses in the Market Area or which are required by Landlord's mortgagee, in an amount equal to one hundred percent (100%) of the full replacement cost thereof above foundation walls ("**Landlord Property Insurance**"). Any and all such insurance: (x) may be maintained under a blanket policy affecting other properties of Landlord and/or its affiliated business organizations, and (y) may be written with commercially reasonable deductibles as determined by Landlord. Tenant Property Insurance and Landlord Property Insurance are referred to collectively herein as "**Property Insurance**".

(b) Tenant acknowledges that Landlord is an agency of the State of Texas and has only such authority to obtain insurance for third parties as is granted to Landlord by state law or as may be reasonably implied by such law. For so long as Landlord is an agency of the State of Texas and is so limited, Landlord shall have no obligation under this Agreement to obtain policies of insurance and shall have the right, in Landlord's sole discretion, to determine whether Landlord will maintain policies of insurance, operate programs of self-insurance, or utilize any other program of risk-protection in connection with Landlord's property.

(c) Tenant acknowledges that because Landlord is an agency of the State of Texas, liability for the tortious conduct of the agents and employees of Landlord (other than the medical liability of medical staff physicians) or for injuries caused by conditions of tangible state property is subject to the provisions of the Texas Tort Claims Act, Texas Civil Practice and Remedies Code, Chapter 101, as amended from time to time, if and to the extent applicable.

(d) Workers compensation insurance coverage for employees of Landlord will be provided by Landlord as mandated by the provisions of Texas Labor Code, Chapter 503, as amended from time to time.

15. CASUALTY; TAKING

15.1 Damage. If the Premises, Parking Lot or any of the Common Areas serving the Premises are damaged in whole or part because of fire or other casualty ("**Casualty**"), or if the Premises, Parking Lot or any of the Common Areas serving the Premises are subject to a taking in connection with the exercise of any power of eminent domain, condemnation, or purchase under threat or in lieu thereof (any of the foregoing, a "**Taking**"), then unless this Lease is terminated in accordance with Section 15.2 below, Landlord shall restore the Building, Parking Lot and/or the Premises to substantially the same condition as existed on the Term Commencement Date, or in the event of a partial Taking which affects the Building, Parking Lot or the Premises, restore the remainder of the Building, Parking Lot and the Premises not so Taken to substantially the same condition as is reasonably feasible. Subject to actual delays in the substantial completion of Landlord's restoration work caused by the acts or wrongful or negligent omissions of any of the Tenant Parties of which Tenant has prior written notice, and applicable Legal Requirements then in existence, and instances of Force Majeure, Landlord shall substantially complete such restoration within one (1) year from the date of such Casualty or Taking. Landlord shall deliver to Tenant a construction schedule prepared by Landlord's general contractor (the "**Restoration Estimate**") as soon as reasonably possible and in any event within ninety (90) days after the occurrence of the applicable Casualty or Taking, which schedule shall include any period necessary for the permitting or approval of such restoration by applicable authorities having jurisdiction over such work. Upon substantial completion of such restoration by Landlord, Tenant shall use diligent efforts to complete restoration of the Premises to substantially the same condition as existed immediately prior to such Casualty or Taking, as the case may be, as soon as reasonably possible. In connection with Tenant's restoration obligations hereunder, Landlord shall provide Tenant with copies of the plans for Landlord's restoration work upon Tenant's request. Tenant agrees to cooperate with Landlord in such manner as Landlord may reasonably request (at no cost to Tenant) to assist Landlord in collecting insurance proceeds due in connection with any Casualty which affects the Premises or the Building. In no event shall Landlord be required to expend more than the Net (hereinafter defined) insurance proceeds Landlord receives for damage to the Premises and/or the Building or the Net Taking award attributable to the Premises and/or the Building. "**Net**" means the insurance proceeds or Taking award actually paid less all reasonable costs and expenses, including adjusters and attorney's fees, of obtaining the same. Under no circumstances shall Landlord be required to repair any damage to, or make any repairs to or replacements of, Tenant's Work or any other Alterations.

15.2 Termination Rights.

(a) Landlord's Termination Rights. Landlord may terminate this Lease upon thirty (30) days' prior written notice to Tenant if:

(i) more than thirty-five percent (35%) of the Building or any material means of access thereto is taken; or

(ii) more than thirty-five percent (35%) of the Building is damaged by Casualty.

(b) Tenant's Termination Rights. If Landlord fails to substantially complete restoration of the Premises, subject to the conditions set forth in Section 15.1 above, within the timeframe set forth in the Restoration Estimate, or fails to promptly (within 60 days following the occurrence of such Casualty) commence and to thereafter diligently prosecute such restoration (it being acknowledged that commencing the design of the improvements necessary for such restoration shall constitute "commencement" of such restoration), then Tenant may terminate this Lease upon thirty (30) days' written notice to Landlord. The remedies set forth in this Section 15.2(b) and in Section 15.2(c) below are Tenant's sole and exclusive rights and remedies based upon Landlord's failure to complete the restoration of the Premises as set forth herein. Notwithstanding anything to the contrary contained herein, Tenant shall not have the right to terminate this Lease pursuant to this Section 15 if the Casualty was caused by the negligence or intentional misconduct of any Tenant Party.

(c) Additional Termination Rights. Tenant shall have the right to terminate this Lease upon thirty (30) days' written notice to Landlord if the estimated time to complete restoration (as set forth in the Restoration Estimate) exceeds twelve (12) months. In addition, in the case of any Casualty or Taking affecting the Premises and occurring during the last fifteen (15) months of the Term, then (i) if such Casualty or Taking results in more than twenty-five percent (25%) of the floor area of the Premises being unsuitable for the Permitted Uses, or (ii) the damage to the Premises costs more than $250,000 to restore, then either party shall have the option to terminate this Lease upon thirty (30) days' written notice to the other.

(d) Automatic Termination. In the case of a Taking of the entire Premises, then this Lease shall automatically terminate as of the date of possession by the Taking authority.

15.3 Rent Abatement. In the event of any Casualty or Taking affecting the Premises and/or all material means of access thereto, Base Rent and Tenant's regular monthly payments of Additional Rent on account of Taxes shall be equitably abated for the period from the date of such Casualty or Taking until the earlier of (a) the date that Landlord substantially completes Landlord's restoration work (provided that if Landlord would have completed Landlord's restoration work at an earlier date but for delays caused by the acts or wrongful or negligent omissions of any of the Tenant Parties of which Tenant has prior notice, then the Premises shall be deemed to have been repaired and restored on such earlier date) plus an additional period equal to the timeframe set forth in a construction schedule prepared by Tenant's general contractor (a copy of which construction schedule shall be delivered to Landlord within ninety (90) days after the date of the Casualty or Taking) for the performance of Tenant's restoration obligations, assuming such restoration obligations shall commence within ten (10) Business Days after Landlord substantially completes Landlord's restoration obligations; provided that if Tenant is delayed in completing Tenant's restoration work due to Landlord delays, then Tenant's restoration abatement period shall be extended on a day for day basis, or (b) the date Tenant or other occupant reoccupies any portion of the Premises for the conduct of its business (in which case the Base Rent and Additional Rent allocable to such reoccupied portion shall be payable by Tenant from the date of such occupancy). The reasonable determination of Landlord's architect of the date Landlord's restoration to the Premises shall have been substantially completed shall be controlling unless Tenant disputes same by notice to Landlord given within fifteen (15) Business Days after receipt of written notice from Landlord setting forth such determination by Landlord, and pending resolution of such dispute, Tenant's restoration period (and Tenant's obligation to re-commence the payment of Rent) shall commence in accordance with Landlord's determination. In the event of a Taking where this Lease is not terminated, a just proportion of the Rent, based on the nature and extent of the interference with Tenant's business operations, shall be abated for the duration of the Taking.

15.4 Taking for Temporary Use. If the Premises are Taken for temporary use, this Lease and Tenant's obligations, shall continue, provided however, Base Rent and Tenant's regular monthly payments of Additional Rent on account of Taxes shall be equitably abated for the period of such Taking for temporary use. For purposes hereof, a "**Taking for temporary use**" shall mean a Taking of ninety (90) days or less.

15.5 Disposition of Awards. Except for any separate award for Tenant's movable trade fixtures, relocation expenses, leasehold improvements performed by or on behalf of Tenant, and Tenant's Property, all Taking awards to Landlord or Tenant shall be Landlord's property without Tenant's participation, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant may pursue its own claim against the Taking authority. Landlord hereby agrees not to seek any award for Tenant's movable trade fixtures, relocation expenses, leasehold improvements performed by or on behalf of Tenant, and Tenant's Property. In addition, and for the avoidance of doubt, in the event this Lease is terminated as a result of a casualty in accordance with the terms of this Article 15, Tenant shall be entitled to the proceeds of all Tenant's Insurance Policies, with the exception of any proceeds for damage to the Premises collected by Tenant under Tenant's Damage to the Premises Rented to You coverage.

16. ESTOPPEL CERTIFICATE.

Each party shall at any time and from time to time upon not less than twenty (20) Business Days' prior notice from the other, execute, acknowledge and deliver to the other a statement in writing certifying that this Lease is unmodified and in full force and effect (or if there have been modifications, that the same is in full force and effect as modified and stating the modifications), the dates to which rent has been paid in advance, if any, whether or not, to the certifying party's knowledge, the other party is in default in performance of any covenant, agreement, term, provision or condition contained in this Lease and, if so, specifying each such default, and such other facts related to the rights and/or obligations of the parties under this Lease or the condition of the Premises or Property as the requesting party may reasonably request, it being intended that any such statement delivered pursuant hereto may be relied upon by any prospective purchaser of the Building or of any interest of Landlord therein, any Mortgagee or prospective Mortgagee thereof, any lessor or prospective lessor thereof, any prospective assignee of any Mortgage thereof or any assignee or prospective assignee or transferee of Landlord's or Tenant's interest herein. Time is of the essence with respect to any such requested certificate, each party hereby acknowledging the importance of such certificates in mortgage financing arrangements, prospective sales and the like.

17. HAZARDOUS MATERIALS

17.1 Prohibition. Except for standard office, cleaning and maintenance supplies used in ordinary amounts and stored in proper containers in compliance with all Environmental Laws, Tenant shall not, without the prior written consent of Landlord, bring or permit to be brought, kept or used at, in or on the Premises or elsewhere in the Building or the Property any Hazardous Material other than Tenant's Hazardous Materials, provided that the same shall at all times be brought upon, kept or used only (a) in so-called "control areas" to the extent required by Environmental Laws and (b) in accordance with all Environmental Laws and prudent environmental and biosafety practice. To the extent not Landlord's obligation under this Lease, Tenant shall be responsible for assuring that all laboratory uses are adequately and properly vented in accordance with applicable Legal Requirements. Tenant shall, at its sole cost and expense, comply with all Environmental Laws with respect to the use, storage, handling and disposal of Hazardous Materials. Landlord shall have the right, from time to time, but not more than once per year unless Landlord has reasonable cause, to inspect the Premises for compliance with the terms of this Section 17.1 at Landlord's sole cost and expense.

17.2 Environmental Laws. For purposes hereof, "**Environmental Laws**" shall mean all applicable laws, statutes, ordinances, rules, regulations and policies of any local, state or federal governmental authority having jurisdiction concerning environmental, health and safety matters, including but not limited to any discharge into the air, surface water, sewers, soil or groundwater of any Hazardous Material whether within or outside the Premises, including, without limitation (a) the Federal Water Pollution Control Act, 33 U.S.C. Section 1251 et seq., (b) the Federal Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq. ("**RCRA**"), (c) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq., and (d) the Toxic Substances Control Act of 1976, 15 U.S.C. Section 2601 et seq.

17.3 Hazardous Material Defined.

(a) As used herein, the term "**Hazardous Material**" means asbestos, oil or any hazardous, radioactive or toxic substance, material or waste or petroleum derivative which is or becomes regulated by any Environmental Law, including without limitation live organisms, viruses and fungi, medical waste and any so-called "biohazard" materials regulated by any Environmental Law. The term "**Hazardous Material**" includes, without limitation, oil and/or any material or substance which is designated as a "hazardous substance," "hazardous material," "oil," "hazardous waste" or toxic substance under any Environmental Law.

(b) For purposes hereof, "**Tenant's Hazardous Materials**" shall mean all Hazardous Materials brought, kept, used or disposed of by Tenant at, in or on the Premises for the Permitted Uses, and those Hazardous Materials listed in Tenant's submissions concerning the Premises to any governmental authorities, including, without limitation, the City of Houston Fire Department.

17.4 Chemical Safety Program. Tenant shall establish and maintain a chemical safety program administered by a licensed, qualified individual in accordance with the requirements of any applicable governmental authority. Tenant shall be solely responsible for all costs incurred in connection with such chemical safety program. Not more than thirty (30) days prior to the commencement of lab operations within the Premises, Tenant shall provide Landlord with (i) a written description and Tenant's proposed safety procedures for the laboratory to be established by Tenant in the Premises; and (ii) a list of the chemicals to be used in said laboratory; and (iii) the relevant laboratory and environmental safety documents promulgated by Tenant that are applicable to Tenant's permitted operations in the Premises. Tenant shall obtain and maintain during the Term any permit required by any such applicable governmental authority.

17.5 Testing. If any Mortgagee or governmental authority requires testing to determine whether there has been any release of Hazardous Materials in violation of any Environmental Law or that results in a requirement to perform any response action(s) pursuant to applicable Environmental Laws and the results of such testing and any other relevant information establish that such release is the result of the acts or omissions of any of the Tenant Parties, then, subject to the terms and conditions of this Lease, Landlord shall be entitled to perform such testing. Tenant shall be entitled to conduct its own testing and investigations to refute the conclusions of the results of such testing by Landlord so long as Tenant provides Landlord with a written scope of work concerning such testing and investigations to be performed on behalf of Tenant at least one week in advance of the date that Tenant begins such work.

17.6 Removal. Tenant shall be responsible, at its sole cost and expense, for Hazardous Material and other biohazard disposal services for the Premises for Hazardous Materials brought in, on, at, under or about the Premises by or on behalf of any of the Tenant Parties. Such services shall be performed by contractors reasonably acceptable to Landlord and on a sufficient basis to ensure that the Premises are at all times kept neat, clean and in compliance with applicable Environmental Laws relating to Hazardous Materials. Biohazards shall be kept in appropriate, specially marked containers, as required by Environmental Law, which containers shall be removed at the expiration or earlier termination of the Term. The foregoing shall not be deemed to derogate from Tenant's obligations under Section 21.1 of this Lease.

17.7 Landlord's Responsibilities. To Landlord's actual knowledge without duty of inquiry, as of the Execution Date, the Property and Premises are in compliance with all applicable Environmental Laws, including OSHA, and no Hazardous Materials have been released at, in, on, or under the Property or Premises. Except to the extent such violation relates to the act or omission of any of the Tenant Parties, Landlord shall, to the extent required by an applicable Environmental Law, take all steps necessary to remedy any violation of any applicable Environmental Law at the Property and Premises during the Term, and Landlord shall take all steps necessary to ensure the cleanup or remediation of any Hazardous Materials or biological materials at the Property and Premises to the extent required so as to be in compliance with all applicable Environmental Law, unless the condition requiring such cleanup or remediation was caused by any of the Tenant Parties.

17.8 Hazardous Materials Indemnity. Except to the extent contributed to or exacerbated by the Landlord Parties, Tenant shall indemnify, defend (with counsel reasonably acceptable to Landlord) and hold Landlord harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities and losses (including, without limitation, reasonable attorneys' fees, consultant and expert fees) arising during or after the Term as a result of: (i) the presence of Hazardous Materials in amounts in excess of reportable quantities or reportable concentrations (in each case as required under Environmental Laws) or in amounts requiring a response action pursuant to any Environmental Law at, in, on or under the Premises, in each case to the extent the presence of such Hazardous Materials is caused by any act or omission of any of the Tenant Parties, or (ii) a breach by Tenant of its obligations under this Article 17.

18. RULES AND REGULATIONS.

Tenant will faithfully observe and comply with the reasonable Rules and Regulations as may be promulgated, from time to time, with respect to the day-to-day operation of the Building, the Property and construction within the Property of which Tenant has reasonable prior written notice (collectively, the "**Rules and Regulations**"); provided however, such Rules and Regulations shall not materially interfere with Tenant's use of the Premises for the Permitted Use, nor impose any material cost or liability on Tenant. Landlord agrees to implement the Rules and Regulations and enforce the Rules and Regulations against all tenants in a uniform and non-discriminatory manner. In the case of any conflict between the provisions of this Lease and any future rules and regulations, the provisions of this Lease shall control.

19. LAWS AND PERMITS.

19.1 Legal Requirements. Tenant shall not cause or permit the Premises, or cause the Property or the Building to be used in any way that violates any Legal Requirement, order, permit, approval, variance, covenant or restrictions of record or any provisions of this Lease, or materially interferes with the rights of tenants of the Building. Tenant shall obtain, maintain and pay for all permits and approvals needed for the operation of Tenant's business and/or Tenant's Rooftop Equipment, as soon as reasonably possible, and in any event shall not undertake any operations or use of Tenant's Rooftop Equipment unless all applicable permits and approvals are in place and shall, promptly take all actions necessary to comply with all Legal Requirements, including, without limitation, the Occupational Safety and Health Act, applicable to Tenant's use of the Premises, the Property or the Building. Tenant shall maintain in full force and effect all certifications or permissions required by any authority having jurisdiction to authorize, franchise or regulate Tenant's use of the Premises. Tenant shall be solely responsible for procuring and complying at all times with any and all necessary permits and approvals directly or indirectly relating or incident to: the conduct of its activities on the Premises; its scientific experimentation, transportation, storage, handling, use and disposal of any chemical or radioactive or bacteriological or pathological substances or organisms or other hazardous wastes or environmentally dangerous substances or materials or medical waste or animals or laboratory specimens. Within fifteen (15) Business Days of a request by Landlord, which request shall be made not more than once during each period of twelve (12) consecutive months during the Term hereof, unless otherwise requested pursuant to an audit of the State of Texas, by any mortgagee of Landlord or unless Landlord reasonably suspects that Tenant has violated the provisions of this Section 19.1, Tenant shall furnish Landlord with copies of all such permits and approvals that Tenant possesses or has obtained.

19.2 Compliance with Healthcare Laws. Each party enters into this Agreement with the intent of conducting their relationship by and between Landlord and Tenant in full compliance with, and shall comply with, (i) the federal anti-referral laws known as the "Stark" law, the Medicare and Medicaid Anti-Fraud and Abuse law, including but not limited to the federal Anti-Kickback Statute and the federal beneficiary inducement civil monetary penalty statute, and (ii) the Texas Occupations Code patient non-solicitation law. Notwithstanding any unanticipated effect of any of the provisions in this Agreement, Landlord and Tenant each agree that it will intentionally conduct itself under the terms of this Agreement in a manner so as to avoid a violation of the Stark Law, the Medicare and Medicaid Anti-Fraud and Abuse law, and the Texas Occupations Code patient non-solicitation law.

20. DEFAULT

20.1 Events of Default. The occurrence of any one or more of the following events shall constitute an "**Event of Default**" hereunder by Tenant:

(a) If Tenant fails to make any payment of Rent or any other payment required hereunder, as and when due, and such failure shall continue for a period of five (5) Business Days after notice thereof from Landlord to Tenant (a "**Monetary Event of Default**");

(b) If Tenant shall fail to execute and deliver to Landlord an estoppel certificate pursuant to Section 16 above or a subordination and attornment agreement pursuant to Section 22 below, within the timeframes set forth therein, and such failure shall continue for a period of five (5) Business Days after notice thereof from Landlord to Tenant;

(c) If Tenant shall fail to maintain any insurance required hereunder and such failure shall continue for a period of ten (10) Business Days after notice thereof from Landlord to Tenant;

(d) If Tenant shall make a Transfer in violation of the provisions of Article 13 above, or if any event shall occur or any contingency shall arise whereby this Lease, or the term and estate thereby created, would (by operation of law or otherwise) devolve upon or pass to any person, firm or corporation other than Tenant, except as expressly permitted by Article 13 hereof, and Tenant does not cure such default with ten (10) Business Days following notice from Landlord;

(e) The failure by Tenant to observe or perform any of the covenants or provisions of this Lease to be observed or performed by Tenant, other than as specified above, and such failure continues for more than thirty (30) days after notice thereof from Landlord; provided, further, that if the nature of Tenant's default is such that more than thirty (30) days are reasonably required for its cure, then Tenant shall not be deemed to be in default if Tenant shall commence such cure within said thirty (30) day period and thereafter diligently prosecute such cure to completion;

(f) Tenant shall admit in writing Tenant's inability to pay its debts generally as they become due, or by the making or offering to make a composition of its debts with its creditors;

(g) Tenant shall make an assignment or trust mortgage, or other conveyance or transfer of like nature, of all or a substantial part of its property for the benefit of its creditors;

(h) a receiver, sequesterer, trustee or similar officer shall be appointed by a court of competent jurisdiction to take charge of all or any part of Tenant's Property and such appointment shall not be vacated within thirty (30) days; or

(i) any proceeding shall be instituted by or against Tenant pursuant to any of the provisions of any Act of Congress or State law relating to bankruptcy, reorganizations, arrangements, compositions or other relief from creditors, and, in the case of any proceeding instituted against it, if Tenant shall fail to have such proceedings dismissed within ninety (90) days or if Tenant is adjudged bankrupt or insolvent as a result of any such proceeding.

20.2 Remedies. Upon an Event of Default, Landlord may, by notice to Tenant, elect to terminate this Lease; and thereupon (and without prejudice to any remedies which might otherwise be available for arrears of Rent or preceding breach of covenant or agreement and without prejudice to Tenant's liability for damages as hereinafter stated), upon the giving of such notice, this Lease shall terminate as of the date specified therein as though that were the Expiration Date. Following such termination, without being taken or deemed to be guilty of any manner of trespass or conversion, and without being liable to indictment, prosecution or damages therefor, Landlord may, by lawful process, enter into and upon the Premises (or any part thereof in the name of the whole); repossess the same, as of its former estate; and expel Tenant and those claiming under Tenant. The words "re-entry" and "re-enter" as used in this Lease are not restricted to their technical legal meanings.

20.3 Damages - Termination.

(a) Upon the termination of this Lease under the provisions of this Article 20, Tenant shall pay to Landlord Rent up to the time of such termination, shall continue to be liable for any preceding breach of covenant, and in addition, shall pay to Landlord as damages, at the election of Landlord, either:

(i) the amount (discounted to present value at the rate of eight percent (8%) per annum) by which, at the time of the termination of this Lease (or at any time thereafter if Landlord shall have initially elected damages under Section 20.3(a)(ii) below), (x) the aggregate of Rent projected over the period commencing with such termination and ending on the Expiration Date, exceeds (y) the aggregate projected rental value of the Premises for such period, taking into account a reasonable time period during which the Premises shall be unoccupied, plus all Reletting Costs (hereinafter defined); or

(ii) amounts equal to Rent which would have been payable by Tenant had this Lease not been so terminated, payable upon the due dates therefor specified herein following such termination and until the Expiration Date, *provided*, *however*, if Landlord shall re-let the Premises during such period, that Landlord shall credit Tenant with the net rents received by Landlord from such re-letting, such net rents to be determined by first deducting from the gross rents as and when received by Landlord from such re-letting the expenses incurred or paid by Landlord in terminating this Lease, as well as the expenses of re-letting, including altering and preparing the Premises for new tenants, brokers' commissions, and all other similar and dissimilar expenses properly chargeable against the Premises and the rental therefrom (collectively, "**Reletting Costs**"), it being understood that any such re-letting may be for a period equal to or shorter or longer than the remaining Term; and *provided*, *further*, that (x) in no event shall Tenant be entitled to receive any excess of such net rents over the sums payable by Tenant to Landlord hereunder and (y) in no event shall Tenant be entitled in any suit for the collection of damages pursuant to this Section 20.3(a)(ii) to a credit in respect of any net rents from a re-letting except to the extent that such net rents are actually received by Landlord prior to the commencement of such suit. If the Premises or any part thereof should be re-let in combination with other space, then proper apportionment on a square foot area basis shall be made of the rent received from such re-letting and of the expenses of re-letting.

(b) In calculating the amount due under Section 20.3(a)(i), above, there shall be included, in addition to the Base Rent, all other considerations agreed to be paid or performed by Tenant, including without limitation Tenant's Share of Taxes, on the assumption that all such amounts and considerations would have increased at the rate of three percent (3%) per annum for the balance of the full term hereby granted.

(c) Suit or suits for the recovery of such damages, or any installments thereof, may be brought by Landlord from time to time at its election, and nothing contained herein shall be deemed to require Landlord to postpone suit until the date when the Term would have expired if it had not been terminated hereunder.

(d) Landlord shall use reasonable efforts to mitigate its damages in the event of any default by Tenant hereunder, however, Landlord's obligation to relet the Premises shall be subject to the reasonable requirements of Landlord to lease other available space for comparable use prior to reletting the Premises and to lease to high quality tenants in a harmonious manner with an appropriate mix of uses, tenants, floor areas and terms of tenancies, and the like.

20.4 Landlord's Self-Help; Fees and Expenses. If an Event of Default results from Tenant's failure to perform any covenant set forth in this Lease, including without limitation the obligation to maintain the Premises in the required condition pursuant to Section 10.1 above, Landlord may, upon not less than ten (10) Business Days' prior notice, perform the same for the account of Tenant. Tenant shall pay to Landlord upon demand therefor any costs incurred by Landlord in connection therewith, together with interest at the Default Rate until paid in full.

20.5 Waiver of Redemption, Statutory Notice and Grace Periods. Tenant does hereby waive and surrender all rights and privileges which it might have under or by reason of any present or future Legal Requirements to redeem the Premises or to have a continuance of this Lease for the Term hereby demised after being dispossessed or ejected therefrom by process of law or under the terms of this Lease or after the termination of this Lease as herein provided. Except to the extent prohibited by Legal Requirements, any statutory notice and grace periods provided to Tenant by law are hereby expressly waived by Tenant.

20.6 Landlord's Remedies Not Exclusive. The specified remedies to which Landlord may resort hereunder are cumulative and are not intended to be exclusive of any remedies or means of redress to which Landlord may at any time be lawfully entitled, and Landlord may invoke any remedy (including the remedy of specific performance) allowed at law or in equity as if specific remedies were not herein provided for.

20.7 No Waiver. Landlord's failure to seek redress for violation, or to insist upon the strict performance, of any covenant or condition of this Lease, or any of the Rules and Regulations promulgated hereunder, shall not prevent a subsequent act, which would have originally constituted a violation, from having all the force and effect of an original violation. The receipt by Landlord of Rent with knowledge of the breach of any covenant of this Lease shall not be deemed a waiver of such breach. No provisions of this Lease shall be deemed to have been waived by either party unless such waiver be in writing signed by such party. No payment by Tenant or receipt by Landlord of a lesser amount than the Rent herein stipulated shall be deemed to be other than on account of the stipulated Rent, nor shall any endorsement or statement on any check or any letter accompanying any check or payment as Rent be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such Rent or pursue any other remedy in this Lease provided.

20.8 Intentionally Omitted.

20.9 Landlord Default.

(a) Notwithstanding anything to the contrary contained in this Lease, Landlord shall in no event be in default in the performance of any of Landlord's obligations under this Lease unless Landlord shall have failed to (i) pay any sum to Tenant as and when required by the terms of this Lease and such failure continues for ten (10) business days after receipt of a written notice; (ii) except as set forth in Section 20.9(a)(iii) below, perform any non-monetary obligation within thirty (30) days (or such additional time as is reasonably required to correct any such default, provided Landlord commences cure within thirty (30) days and diligently and continuously pursues the same to completion) after notice by Tenant to Landlord properly specifying wherein Landlord has failed to perform any such obligation; or (iii) perform any non-monetary obligation within five (5) Business Days after notice by Tenant to Landlord properly specifying wherein Landlord has failed to perform any such obligation, resulting in a condition that poses an imminent risk of injury or damage to life or property (including, without limitation, Tenant's manufacturing and/or research and development processes) or a material disruption to Tenant's operations within the Premises. Nothing in this Section 20.9 shall extend or delay Tenant's rights of rent abatement under Section 9.5(b).

(b) If Landlord is in default under this Lease (determined in accordance with Section 20.9(a) above), and if such failure materially adversely affects Tenant's ability to operate its business in the ordinary course in accordance with the terms of this Lease, then Tenant shall have the right to cure such default on Landlord's behalf, in which event Landlord shall reimburse Tenant within thirty (30) days after receipt of a reasonably detailed invoice for all reasonable costs and expenses incurred by Tenant in connection therewith. If Landlord fails to timely reimburse Tenant for such costs and expenses, then, without in any way limiting Tenant's right at law or equity, Tenant shall have the right to recover the same by an abatement of Base Rent, provided that (A) such abatement shall cease at such time as and to the extent that payment is tendered to Tenant; and (B) if the amount of the abatement is more than twenty-five percent (25%) of the amount of Base Rent due in any month, then the amount abated in any one month shall not exceed twenty-five percent (25%) of the Base Rent and the excess amount of the abatement shall be carried forward with interest at the Default Rate. Tenant's self-help rights under this Section 20.9(b) shall be exercised by Tenant only (i) with respect to conditions that materially adversely affect Tenant's ability to operate its business in the ordinary course in accordance with the terms of this Lease, and (ii) after Tenant has provided Landlord with notice of Tenant's intention to exercise such right (which notice shall conspicuously state the following in bold caps: "**TENANT NOTICE OF INTENTION TO EXERCISE SELF-HELP**" and which notice shall include an explicit statement that such notice is a notice delivered pursuant to this Section 20.9(b) and Landlord's failure to perform the specified obligation will trigger the provisions of this Section 20.9(b), and which notice shall include a copy of the default notice delivered pursuant to Section 20.9(a) above), and Landlord has failed to remedy the condition complained of within five (5) days after its receipt of such notice. In the event of any condition posing an imminent risk of injury or damage to life or property (including, without limitation Tenant's manufacturing and/or research and development processes) or a material disruption to Tenant's operations within the Premises, Tenant's notice to Landlord under the preceding clause (ii) may be given simultaneously with a default notice as set forth in Section 20.9(a), and Tenant may proceed with its cure if Landlord fails to cure such default within one (1) Business Day thereafter.

(c) Except as expressly set forth in this Lease, Tenant shall not have the right to terminate or cancel this Lease or to withhold rent or to set-off or deduct any claim or damages against rent as a result of any default by Landlord or breach by Landlord of its covenants or any warranties or promises hereunder, except in the case of a wrongful eviction of Tenant from the Premises (constructive or actual) by Landlord, unless same continues after notice to Landlord thereof and an opportunity for Landlord to cure the same as set forth above. In addition, except as expressly set forth in this Lease, Tenant shall not assert any right to deduct the cost of repairs or any monetary claim against Landlord from rent thereafter due and payable under this Lease.

21. SURRENDER; ABANDONED PROPERTY; HOLD-OVER

21.1 Surrender. Upon the expiration or earlier termination of the Term, Tenant shall (i) peaceably quit and surrender to Landlord the Premises broom clean, in the condition in which Tenant is obligated to maintain the same excepting only ordinary wear and tear and damage by fire or other Casualty; (ii) remove all of Tenant's Property, all autoclaves and cage washers, and, to the extent specified by Landlord in accordance with Section 11.1 above, or as Tenant otherwise elects, Alterations made by Tenant; and (iii) repair any damages to the Premises or the Building caused by the removal of Tenant's Property and/or any such Alterations. Tenant's obligations under this Section 21.1 shall survive the expiration or earlier termination of this Lease. No act or thing done by Landlord during the Term shall be deemed an acceptance of a surrender of the Premises, and no agreement to accept such surrender shall be valid, unless in writing signed by Landlord. The delivery of keys to any employee of Landlord or of Landlord's agents shall not operate as a termination of this Lease or a surrender of the Premises.

21.2 Abandoned Property. After the expiration or earlier termination hereof, if Tenant fails to remove any property from the Building or the Premises which Tenant is obligated by the terms of this Lease to remove within ten (10) Business Days after written notice from Landlord, such property (the "**Abandoned Property**") shall be conclusively deemed to have been abandoned, and may either be retained by Landlord as its property or sold or otherwise disposed of in such manner as Landlord may see fit. If any item of Abandoned Property shall be sold, Tenant hereby agrees that Landlord may receive and retain the proceeds of such sale and apply the same, at its option, to the expenses of the sale, the cost of moving and storage, any damages to which Landlord may be entitled under Article 20 hereof or pursuant to law, and to any arrears of Rent.

21.3 Holdover. If any of the Tenant Parties holds over in the Premises after the end of the Term, Tenant shall be deemed a tenant-at-sufferance subject to the provisions of this Lease; provided that whether or not Landlord has previously accepted payments of Rent from Tenant, (i) Tenant shall pay Base Rent at 150% of the highest rate of Base Rent payable during the Term with respect to the first sixty (60) days of such holdover, and at 200% of such rate thereafter, and (ii) Tenant shall continue to pay to Landlord all Additional Rent. In addition, in the event Tenant holds over for a period in excess of sixty (60) days, Tenant shall be liable for all damages, including without limitation lost business and consequential damages, incurred by Landlord as a result of such holding over (provided, however, in no event shall Tenant be liable for punitive damages), Tenant hereby acknowledging that Landlord may require the Premises following the expiration of the Term for other tenants and that the damages which Landlord may suffer as the result of Tenant's holding over cannot be determined as of the Execution Date. Nothing contained herein shall grant Tenant the right to hold over after the expiration or earlier termination of the Term. Tenant's obligations under this Section 21.3 shall survive the expiration or earlier termination of this Lease.

22. MORTGAGEE RIGHTS

22.1 Subordination. As a condition to Tenant's agreement to subordinate Tenant's interest in this Lease to any current and future ground lease, overleases, mortgage, deed of trust, or similar instrument covering the Premises, the Property and to all advances, modifications, renewals, replacements, and extensions thereof (each of the foregoing, a "**Mortgage**"), Landlord shall obtain from each such Mortgagee, a commercially reasonable subordination, attornment and non-disturbance agreement in a form reasonably acceptable to Tenant (a "**Non-disturbance Agreement**"), pursuant to which such Mortgagee shall agree that if and so long as no Event of Default hereunder shall have occurred and be continuing, the leasehold estate granted to Tenant and the rights of Tenant pursuant to this Lease to quiet and peaceful possession of the Premises in accordance with and subject to the terms and conditions of this Lease, and this Lease shall not be terminated, modified, affected or disturbed by any action which such Mortgagee may take to foreclose any such Mortgage or to terminate such superior lease, as applicable, and that any successor landlord shall recognize this Lease as being in full force and effect as if it were a direct lease between such successor landlord and Tenant upon all of the terms, covenants, conditions and options granted to Tenant under this Lease. Tenant further shall attorn to and recognize any successor landlord so long as Tenant has entered into a Non-disturbance Agreement with such successor landlord or its predecessor in interest, whether through foreclosure or otherwise, as if the successor landlord were the originally named landlord. Tenant agrees to execute, acknowledge and deliver such instruments, confirming such subordination and attornment in commercially reasonable form within fifteen (15) days of request therefor. Tenant shall have the right to record the Non-disturbance Agreement if not recorded by the Mortgagee. In the event of any conflict between the terms of a Non-disturbance Agreement and this Article 22, the terms of the Non-disturbance Agreement in question shall prevail. A Non-disturbance Agreement may condition the release of any insurance proceeds for restoration of a material casualty on the following: there not being an Event of Default hereunder; this Lease shall remain in full force and effect; and only such other reasonable conditions customarily imposed by reasonable lenders in similar transactions, taking into consideration Tenant's credit-standing and Tenant's need for the space to be restored to continue its operations.

22.2 Mortgagee Liability. Tenant acknowledges and agrees that if any Mortgage shall be foreclosed and Tenant is a party to a Non-disturbance Agreement with the party holding such Mortgage, (a) the liability of the Mortgagee and its successors and assigns shall exist only so long as such Mortgagee or purchaser is the owner of the Premises, and such liability shall not continue or survive after further transfer of ownership; and (b) such Mortgagee and its successors or assigns shall not be (i) liable for any act or omission of any prior lessor under this Lease; (ii) liable for the performance of Landlord's covenants pursuant to the provisions of this Lease which arise and accrue prior to such entity succeeding to the interest of Landlord under this Lease or acquiring such right to possession; (iii) subject to any offsets or defense which Tenant may have at any time against Landlord (other than Tenant's express offset rights under this Lease, except that Tenant shall not have the right to apply the Remaining Funds towards Rent due hereunder for so long as any Mortgagee and its successors or assigns are in possession of the Building); or (iv) bound by any base rent or other sum which Tenant may have paid more than one (1) month in advance. Nothing in the immediately preceding sentence shall relieve such Mortgagee and its successors and assigns of the obligation to fulfill the obligations of Landlord from and after the date they succeed to the interest of Landlord hereunder (e.g., to cure any then-continuing default).

23. QUIET ENJOYMENT.

Landlord covenants that so long as there is no Event of Default, Tenant shall peaceably and quietly hold, occupy and enjoy the Premises during the Term from and against the claims of all persons lawfully claiming by, through or under Landlord subject, nevertheless, to the covenants, agreements, terms, provisions and conditions of this Lease, and to any Mortgage to which this Lease is subject and subordinate, as hereinabove set forth.

24. NOTICES.

Any notice, consent, approval, request, bill, demand or statement hereunder (each, a "**Notice**") by either party to the other party shall be in writing and shall be deemed to have been duly given when either delivered by hand or by nationally recognized overnight courier (in either case with evidence of delivery or refusal thereof) addressed as follows:

If to Landlord:	The University of Texas M. D. Anderson Cancer Center Attention: Program Director of Real Estate Real Estate P.O. Box 301439 FHB – Unit 717 Houston, Texas 77230-1439
With a copy to:	The University of Texas System 210 West 7th Street Austin, Texas 78701 Attention: Executive Director of Real Estate
if to Tenant:	Ziopharm Oncology, Inc. One First Avenue Parris Building #34, Navy Yard Plaza Boston, MA 02129 Attention: Lynn Ferrucci
With a copy to:	Goulston & Storrs PC 400 Atlantic Avenue Boston, MA 02110 Attention: Jonathan N. Nichols, Esq.

Notwithstanding the foregoing, any notice from Landlord to Tenant regarding ordinary business operations (i.e., ministerial notices with no legal force and effect, such as notices related to Building events, exercise of rights of access, planned maintenance activities etc.) may instead be given pursuant to a mutually agreeable written protocol (which may include written notice delivered by facsimile or by hand to the attention of Tenant's facilities manager (or such other person designated by Tenant) at the Premises (and without copies as specified above). Either party may at any time change the address or specify an additional address for such Notices by delivering or mailing, as aforesaid, to the other party a notice stating the change and setting forth the changed or additional address, provided such changed or additional address is within the United States. Notices shall be effective upon the date of receipt or refusal thereof and may be given by attorneys for the parties.

25. GENERATOR.

Tenant may elect, at its sole cost and expense, to maintain, construct and install emergency back-up electrical generators and/or uninterruptible power supply systems (each, a "**Back-Up Generator**") in the Generator Premises set forth on Exhibit 1B attached hereto. Said Back-Up Generator shall be subject to the reasonable rules and guidelines adopted from time to time by Landlord with respect thereto, and to all applicable Legal Requirements. Any and all work and improvements to be performed by Tenant to construct and install said Back-Up Generator (such as installing conduits and connections from the Back-Up Generator to the Premises) (collectively, "**Generator Equipment**") shall be considered to be an Alteration and shall be subject to Landlord's review and prior written approval, if applicable, in accordance with the terms of this Lease. The Generator Premises will be provided on an "as is," "where is" basis, and, except as expressly set forth in this Lease, Landlord has made no representations or warranties, of any kind, with respect thereto. At Landlord's election, following the expiration or earlier termination of the Term, Tenant shall, at Tenant's expense, remove the Back-Up Generator and/or Generator Equipment and repair and restore, in a good and workmanlike manner, any damage to the Property arising out of or resulting from such removal, including, without limitation, by the closing of any slab penetrations.

26. MISCELLANEOUS

26.1 Separability. If any provision of this Lease or portion of such provision or the application thereof to any person or circumstance is for any reason held invalid or unenforceable, the remainder of this Lease (or the remainder of such provision) and the application thereof to other persons or circumstances shall not be affected thereby.

26.2 Captions. The captions are inserted only as a matter of convenience and for reference, and in no way define, limit or describe the scope of this Lease nor the intent of any provisions thereof.

26.3 Broker. Tenant warrants and represents that it has dealt with no broker in connection with the consummation of this Lease other than CBRE (the "**Broker**"). Tenant agrees to defend, indemnify, and hold Landlord harmless from and against any Claims arising in breach of the representation and warranty set forth in the immediately preceding sentence. Tenant shall be solely responsible for the payment of any brokerage commissions to Broker. Landlord warrants and represents that it has dealt with no broker in connection with the consummation of this Lease.

26.4 Entire Agreement. Except as expressly set forth herein, this Lease, Lease Summary Sheet and the Exhibits attached hereto and incorporated herein contain the entire and only agreement between the parties and any and all statements and representations, written and oral, including previous correspondence and agreements between the parties hereto with respect to the terms of this Lease, are merged herein. Tenant acknowledges that all representations and statements upon which it relied in executing this Lease are contained herein and that Tenant in no way relied upon any other statements or representations, written or oral. This Lease may not be modified orally or in any manner other than by written agreement signed by the parties hereto.

26.5 Governing Law. This Lease is made pursuant to, and shall be governed by, and construed in accordance with, the laws of the State of Texas without reference to its conflicts of law provisions.

26.6 Representation of Authority. By his or her execution hereof, Landlord and Tenant each hereby warrants and represents to the other that the signatories on behalf of the respective parties are duly authorized to execute this Lease on behalf of such party.

26.7 Expenses Incurred by Landlord Upon Tenant Requests. Tenant shall, upon demand, reimburse Landlord for all reasonable third party costs incurred by Landlord in connection with requests by Tenant for consents to any Alterations or Transfers (excepting only Transfers pursuant to Section 13.4), in each case within thirty (30) days following Landlord's invoice; provided, however, any such fees shall not exceed $2,500 in the aggregate with respect to each Transfer or Alteration.

26.8 Survival. All obligations and liabilities of Landlord or Tenant to the other which accrued before the expiration or other termination of this Lease, and all such obligations and liabilities which by their nature or under the circumstances can only be, or by the provisions of this Lease may be, performed after such expiration or other termination, shall survive the expiration or other termination of this Lease. Without limiting the generality of the foregoing, the rights and obligations of the parties with respect to any indemnity under this Lease, and with respect to any Rent and any other amounts payable under this Lease, shall survive the expiration or other termination of this Lease.

26.9 Limitation of Liability. Landlord and Tenant specifically agree that in no event shall (a) any officer, director, trustee, employee or representative of Landlord or of any of the other Landlord Parties ever be personally liable for any obligation under this Lease, (b) Landlord or any of the other Landlord Parties be liable for consequential, incidental or punitive damages or for lost profits whatsoever in connection with this Lease, (c) any officer, director, trustee, employee or representative of Tenant or of any of the other Tenant Parties ever be personally liable for any obligation under this Lease, and (d) except as may be expressly provided pursuant to Section 21.3 above, Tenant or any of the other Tenant Parties be liable for consequential, incidental or punitive damages or for lost profits whatsoever in connection with this Lease.

26.10 Binding Effect. The covenants, agreements, terms, provisions and conditions of this Lease shall bind and benefit the successors and assigns of the parties hereto with the same effect as if mentioned in each instance where a party hereto is named or referred to, except that no violation of the provisions of Section 13 hereof shall operate to vest any rights in any successor or assignee of Tenant.

26.11 Landlord Obligations upon Transfer. Except as expressly set forth herein (including, without limitation, in Sections 5.1(b) and 11.4, and in Exhibit 3), upon any sale, transfer or other disposition of the Building, Landlord shall be entirely freed and relieved from the performance and observance accruing thereafter of all covenants and obligations hereunder on the part of Landlord to be performed and observed to the extent the Landlord's successor assumes the same, it being understood and agreed in such event (and it shall be deemed and construed as a covenant running with the land) that the person succeeding to Landlord's ownership of said reversionary interest shall thereupon and thereafter assume, and perform and observe, any and all of such covenants and obligations of Landlord.

26.12 Confidentiality.

(a) In connection with this Lease, from time to time Tenant has delivered and/or will deliver to Landlord, and the Landlord Parties may observe or have the opportunity to review, certain information about Tenant and/or its affiliates, including but not limited to financial information, trade secrets, information related to research and development, and other information related to the business operations of Tenant and/or its affiliates (such information whether furnished, observed, or reviewed before or after the Execution Date, whether oral, written, or visual, and regardless of the manner in which it is furnished, observed or reviewed, is collectively hereinafter referred to as "**Tenant's Proprietary Information**"). Tenant's Proprietary Information does not include, however, information which (1) is or becomes generally available to the public other than as a result of a disclosure in violation of this Section 26.12 by Landlord or Landlord's Engaged Persons; (2) was available to Landlord on a non-confidential basis prior to its disclosure by Tenant; or (3) becomes available to Landlord on a non-confidential basis from a person other than Tenant who is not to the knowledge of Landlord or Landlord's Engaged Persons otherwise bound by a confidentiality agreement with Tenant, or is otherwise not under an obligation to Tenant not to transmit the information to Landlord.

(b) Landlord hereby covenants and agrees (A) to keep all Tenant's Proprietary Information confidential; (B) not to disclose or reveal any Tenant's Proprietary Information to any person other than those persons, including its affiliates' employees, agents and representatives, whose duties and responsibilities reasonably require that Tenant's Proprietary Information be disclosed to them in connection with the ownership, financing, and/or sale of any of Landlord's interest in and to the Property or any portion thereof including the Premises (such persons are hereinafter referred to as "**Landlord's Engaged Persons**"); (C) to cause Landlord's Engaged Persons to observe the terms of this Section 26.12; and (D) except as expressly permitted by separate written agreement signed by Tenant, not to use any Tenant's Proprietary Information for any purpose other than in connection with the ownership, financing, and/or sale of any of Landlord's interest in and to the Property or any portion thereof including the Premises.

(c) In the event that Landlord is requested pursuant to, or required by, the Texas Public Information Act, applicable law or regulation or by legal process to disclose any Tenant's Proprietary Information, Landlord agrees that it will provide Tenant with reasonable notice of such request or requirement in order to enable Tenant to seek an appropriate protective order or other remedy, to resist or narrow the scope of such request or legal process, or to waive compliance, in whole or in part, with the terms of this Section 26.12. In any such event Landlord will use reasonable efforts under the circumstances in which disclosure is sought to ensure that all Tenant's Proprietary Information will be accorded confidential treatment by the entity compelling such disclosure and Tenant shall respond in such a time and manner that does not put Landlord or any of its Engaged Persons at risk of violation of such law or regulation or legal process.

(d) Without prejudice to the rights and remedies otherwise available at law or in equity, Landlord agrees that Tenant shall be entitled to seek equitable relief by way of injunction or otherwise if Landlord or any of Landlord's Engaged Persons breach or threaten to breach any of the provisions of this Section 26.12.

(e) Landlord will be responsible for any breach of the terms of this Section 26.12 by it and/or Landlord's Engaged Persons.

(f) No failure or delay in exercising any right, power or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any right, power or privilege hereunder.

(g) The obligations of the parties under this Section 26.12 shall survive the expiration or prior termination of the Term.

26.13 Use of Landlord's Name. Subject to the terms of this Section 26.13, Tenant will not state or imply that Landlord or MDACC endorses any of Tenant's products or services. Subject to the terms of this Section 26.13, all materials utilizing the name, trademarks, service marks, or symbols of Landlord or The University of Texas System for any purpose, including, but not limited to, the use in advertising, marketing, and sales promotion materials or any other materials or mediums (such as the internet, domain names, or URL addresses), must be submitted to Landlord's Brand Core team for prior written approval at the following email address: brandcoreteam@mdanderson.org or to such other person or contact as indicated by Landlord in writing. Landlord shall promptly respond to any such request for approval. Notwithstanding any provision of this Section 26.13 to the contrary, Tenant may, without obtaining Landlord's prior approval, utilize the name of Landlord and/or The University of Texas System to the extent (i) use is reasonably necessary to achieve the purposes of this Lease (including, without limitation, for purposes of obtaining licenses and/or permits); (ii) required by law or to comply with applicable governmental regulations or court order (including, without limitation, disclosure to the extent required by the Securities and Exchange Commission and/or any public stock exchange); or (iii) needed to enforce the terms of this Lease.

Nothing in this Section 26.13 shall amend, restrict, limit or modify in any way, the Existing R&D Agreement or the 2019 R&D Agreement or any other agreement executed by the parties hereto or any of their affiliates in connection therewith (each an "**Ancillary Agreement**"). In the event of any conflict or inconsistency between this Section 26.13 and any Ancillary Agreement, the terms of such Ancillary Agreement shall control.

26.14 Force Majeure. Other than for obligations under this Lease that can be performed by the payment of money (e.g., payment of Rent and maintenance of insurance), whenever a period of time is herein prescribed for action to be taken by either party hereto, such party shall not be liable or responsible for, and there shall be excluded from the computation of any such period of time, any delays due to strikes, riots, acts of God, shortages of labor or materials, war, acts of terrorism, governmental laws, regulations, or restrictions, or any other causes of any kind whatsoever which are beyond the control of such party (collectively "**Force Majeure**"). In no event (i) shall financial inability of a party be deemed to be Force Majeure, and (ii) shall Force Majeure postpone or delay any of Tenant's remedies set forth in Section 3.2.

26.15 Counterparts; Electronic Signatures. This Lease may be executed in two or more counterparts, and by each or either of the parties in separate counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery by fax or by electronic mail file attachment of any executed counterpart to this Lease will be deemed the equivalent of the delivery of the original executed instrument.

26.16 Texas State Agency Limitations. Landlord is the governing board of The University of Texas System, an agency of the State of Texas. As an agency of the State of Texas, it is subject to the Constitution and laws of the State of Texas and, under the Constitution and laws of the State of Texas, possesses certain rights and privileges, is subject to certain limitations and restrictions, and only has such authority as is granted under the Constitution and laws of the State of Texas. Notwithstanding any other provision to the contrary, nothing in this Agreement is intended to be, nor shall be construed to be, a waiver of the sovereign immunity of the State of Texas or a prospective waiver or restriction of any of the rights, remedies, claims and privileges of the State of Texas. Moreover, notwithstanding the generality or specificity of any provision of this Agreement, the provisions of this Agreement as they pertain to the Landlord are enforceable only to the extent authorized by the Constitution and laws of the State of Texas. No party to this Agreement will be required to perform any act or to refrain from any act that would violate any applicable laws, including the Constitution and laws of the State of Texas. Landlord represents and warrants to Tenant that as of the Execution Date, to the best of Landlord's knowledge and except as expressly set forth in this Lease (e.g., Section 6.5), Landlord is authorized by the Constitution and laws of the State of Texas to enter into and perform its obligations under this Lease.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF the parties hereto have executed this Lease as a sealed instrument as of the Execution Date.

LANDLORD

BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, for the use and benefit of The University of Texas M. D. Anderson Cancer Center

By: /s/ Ben Melson
Name: Ben Melson
Title: Senior Vice President and Chief Financial Officer

Approved as to Content:

THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER

By: /s/ Spencer Moore
Name: Spencer Moore
Title: Vice President & Chief Facilities Officer

Reviewed and Approved by UTMDACC Legal Services for UTMDACC Signature:
/s/ Chad Mavity 10/3/19

TENANT

ZIOPHARM ONCOLOGY, INC., A Delaware limited liability company

By: /s/ Kevin Lafond

Name: Kevin Lafond

Title: SVP, Finance, CAO

EXHIBIT 1A

LEASE PLAN – PRIME PREMISES

EXHIBIT 1B

LEASE PLAN – GENERATOR PREMISES

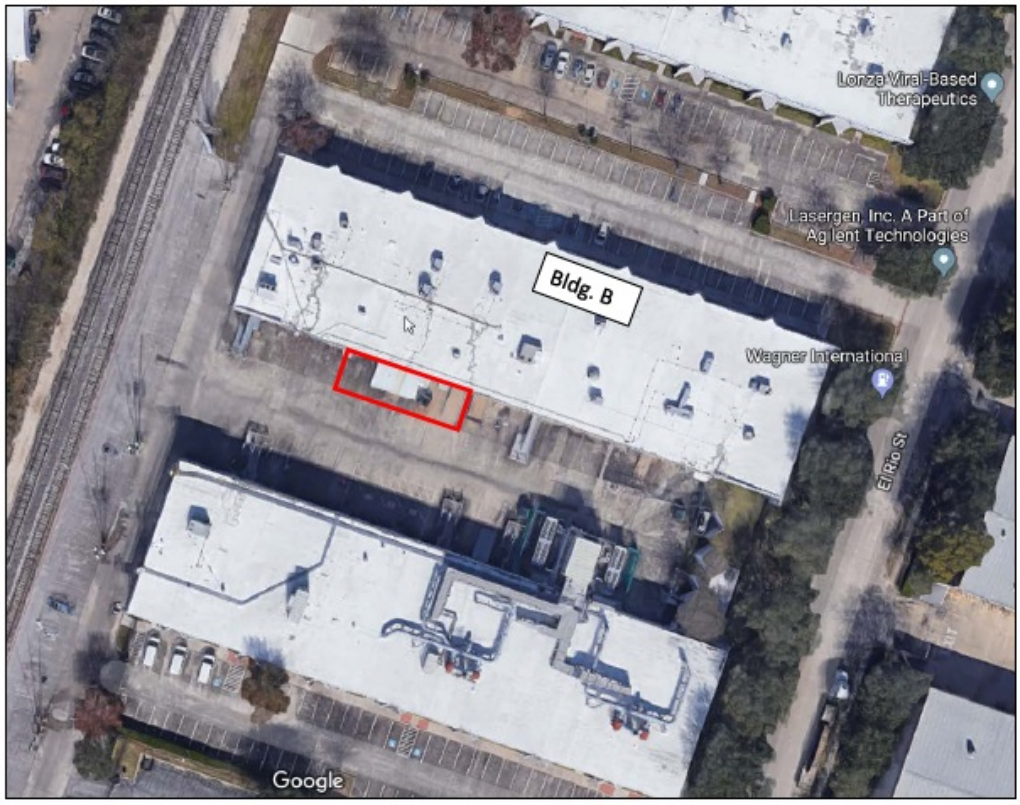


EXHIBIT 1C

LEASE PLAN – ROOFTOP PREMISES

EXHIBIT 1D

LEASE PLAN – GASSES/TANK PREMISES

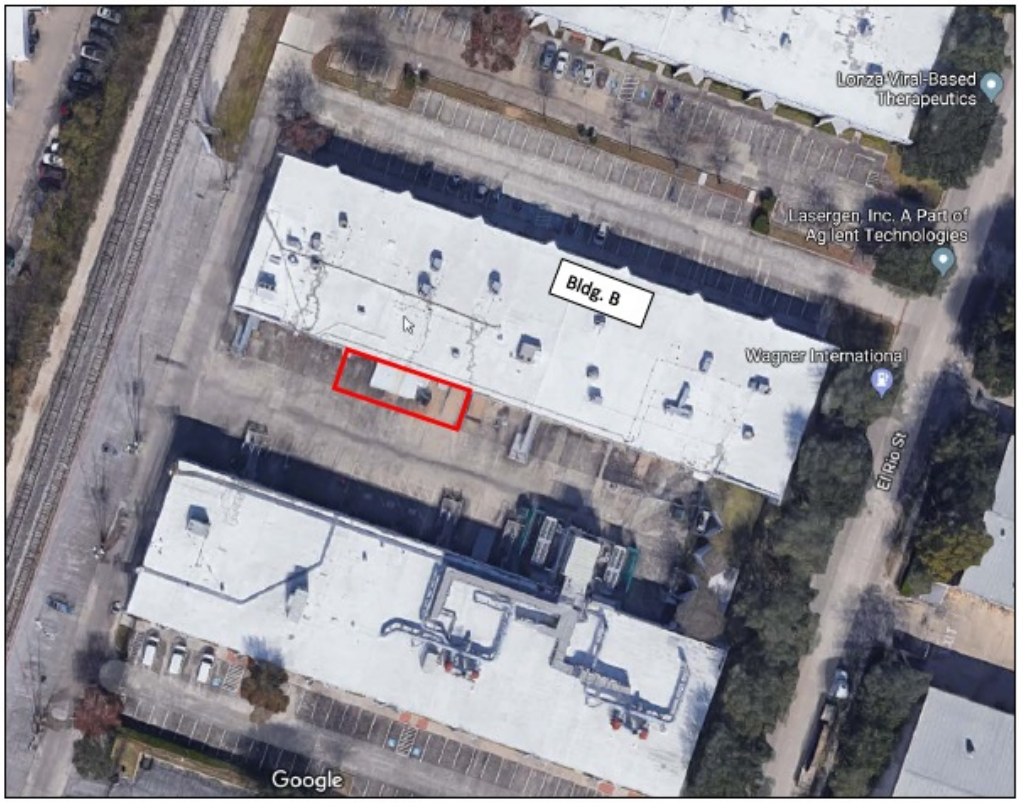


EXHIBIT 2

DESCRIPTION/PLAN OF CAMPUS

The area commonly known as the El Rio Campus, being generally depicted on the plan below.

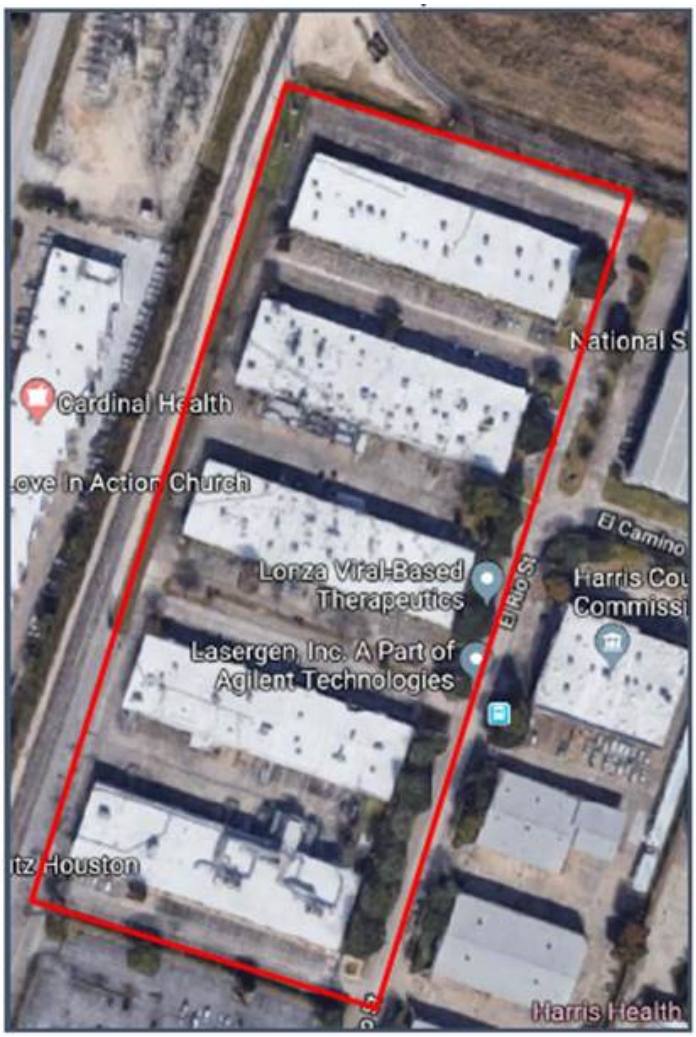


EXHIBIT 3

WORK LETTER

This Exhibit is attached to and made a part of the Lease (the "**Lease**") by and between the BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, acting for the use and benefit of The University of Texas M. D. Anderson Cancer Center, an institution of The University of Texas System ("**Landlord**"), and ZIOPHARM ONCOLOGY, INC., a Delaware corporation ("**Tenant**"), for space located at Building B of the El Rio Buildings, 8000 El Rio Street, Houston, Texas 77054. Capitalized terms used but not defined herein shall have the meanings given in the Lease.

This Work Letter shall set forth the obligations of Landlord and Tenant with respect to the improvements to be performed in preparing the Premises for Tenant's use. This Exhibit shall not be deemed applicable to any additional space added to the Premises at any time or from time to time, whether by any options under the Lease or otherwise, or to any portion of the original Premises or any additions to the Premises in the event of a renewal or extension of the original Term of the Lease, whether by any options under the Lease or otherwise, unless expressly so provided in the Lease or any amendment or supplement to the Lease.

I. Tenant's Work.

1. Tenant's Plans. Tenant anticipates making certain Alterations to the Premises to prepare the Premises for Tenant's occupancy and business operations, including without limitation, the installation of all furniture and fixtures (collectively, "**Tenant's Work**"). Landlord hereby approves of Tenant's Work, provided however, in the event Tenant's Work (a) is materially inconsistent with the depiction of work attached hereto as Exhibit 3-1 ("**Fit Plan of Tenant's Initial Work**"), and (b) requires Landlord's prior approval in accordance with the terms and conditions of Section 11.1(a) of this Lease, then Tenant shall submit to Landlord for approval a set of design/development plans sufficient for Landlord to approve Tenant's proposed design of the Premises (the "**Design/ Development Plans**"), and/or a full set of construction drawings ("**Final Construction Drawings**") for Tenant's Work. The Design/ Development Plans and the Final Construction Drawings are collectively referred to herein as the "**Plans**." In the event Landlord's prior approval is required hereunder, Landlord's approval of the Design/Development Plans and the Final Construction Drawings shall not be unreasonably withheld, conditioned or delayed, provided however, Landlord shall respond to any request for approval of Plans within the time periods set forth in Section 11.1 hereof, and Landlord's failure to timely respond to such request for approval shall be subject to the terms and conditions of Section 11.1 hereof with respect to the deemed approval thereof. Landlord's approval is solely given for the benefit of Landlord and Tenant under this Section and neither Tenant nor any third party shall have the right to rely upon Landlord's approval of the Plans for any other purpose whatsoever.

2. Performance of Tenant's Work. All Tenant's Work shall be performed by Tenant in accordance with the provisions of the Lease (including, without limitation, Section 11 and this Exhibit 3).

3. Cost of Tenant's Work; Priority of Work. All of Tenant's Work shall be performed at Tenant's sole cost and expense (subject to the terms of Section 4 below), and shall be performed in accordance with the provisions of this Lease (including, without limitation, Section 11).

4. Use of Remaining Funds. Subject to Section 5.1(b) of the Lease, Tenant shall be permitted to use any portion of the Remaining Funds towards costs incurred by Tenant in connection with Tenant's Work, including, without limitation, design, engineering and other so-called "soft costs", and costs of furniture, fixtures, equipment (including, without limitation, generators to serve the Premises) and telephone and data systems (collectively "**Tenant's Work Costs**"). Remaining Funds under the 2019 R&D Agreement shall be paid by Tenant, subject to and in accordance with the terms and conditions of the 2019 R&D Agreement and Section 5.1(b) of the Lease. With respect to Remaining Funds under the Existing R&D Agreement, Tenant may submit an application for Tenant's Work Costs (accompanied by invoices from Tenant's contractors, vendors, service providers and consultants (collectively, "**Contractors**") and listing in reasonable detail Tenant's Work Costs) for payment to Tenant or any of Tenant's Contractors. Tenant shall submit application(s) for each Contractor no more often than monthly, and Landlord shall pay such amounts within thirty (30) days following delivery of such application(s). Notwithstanding any provision of this Lease to the contrary, Landlord shall not be released from the obligations and liabilities set forth in this Section I and of Sections 5.1(b) and 11.4 of this Lease following any transfer of the Property by Landlord.

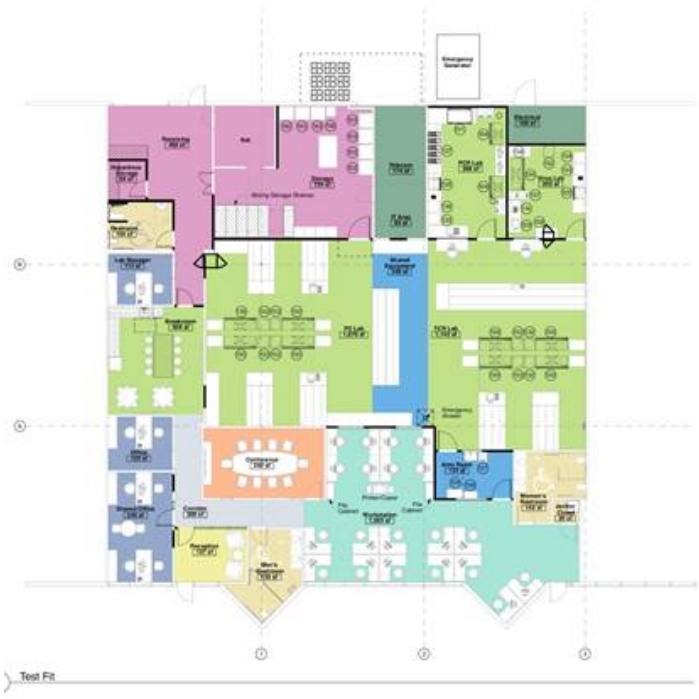
II. Miscellaneous

1. **Tenant's Authorized Representative**. Tenant designates Jim Winiarski (email: jwiniarski@ziopharm.com, telephone 978-835-7958; "**Tenant's Representative**") as the only person authorized to act for Tenant pursuant to this Work Letter. Landlord shall not be obligated to respond to or act upon any request, approval, inquiry or other communication ("**Communication**") from or on behalf of Tenant in connection with this Work Letter unless such Communication is in writing from Tenant's Representative. Tenant may change either Tenant's Representative at any time upon not less than five (5) Business Days advance written notice to Landlord.

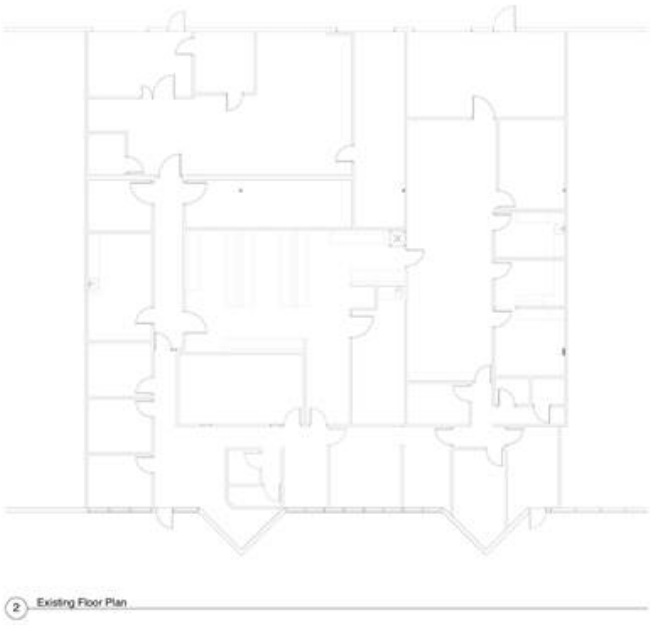
2. **Landlord's Authorized Representative**. Landlord designates Mary Le Johnson (email:MLJohnson2@mdanderson.org, telephone 713-745-1938) ("**Landlord's Representative**") as the only person authorized to act for Landlord pursuant to this Work Letter. Tenant shall not be obligated to respond to or act upon any request, approval, inquiry or other Communication from or on behalf of Landlord in connection with this Work Letter unless such Communication is in writing from Landlord's Representative. A copy of any written Communication must also be sent to Bhargav Goswami (BGoswami@mdanderson.org, 713 -563 -0197). Landlord may change either Landlord's Representative at any time upon not less than five (5) Business Days advance written notice to Tenant.

EXHIBIT 3-1

FIT PLAN OF TENANT'S INITIAL WORK



Test Fit



2 Existing Floor Plan

INVENTURE DESIGN

Ziopharm
Test Fit F1
Project Address

Date: 9/27/19
Project Number: 19.156.00

EXHIBIT 4

LANDLORD'S SERVICES

1. Electricity, natural gas, hot and cold water and sewer service to the Premises
2. Electricity for Campus common areas, including exterior building lighting, if any
3. Maintenance and repair of the Property as described in Section 10.2
4. Trash disposal from the common dumpster serving the Building for disposal of non-hazardous and non-controlled substances
5. Exterior grounds and parking maintenance
6. Campus security systems and services
7. If applicable, maintenance of life safety systems (fire alarm and sprinkler), to the point they are stubbed to the Premises.
8. Such other services as Landlord reasonably determines are necessary or appropriate for the Property and Campus

EXHIBIT 5

INTENTIONALLY OMITTED

EXHIBIT 6

TENANT WORK INSURANCE SCHEDULE

Tenant shall, at its own expense, maintain and keep in force, or cause to be maintained and kept in force by any general contractors, sub-contractors or other third party entities where required by contract, throughout any period of alterations to the Premises or the Building by Tenant, the following insurance coverages:

(1) Property Insurance. "All-Risk" or "Special" Form property insurance, and/or Builders Risk coverage for major renovation projects, including, without limitation, coverage for fire, earthquake and flood; boiler and machinery (if applicable); sprinkler damage; vandalism; malicious mischief coverage on all equipment, furniture, fixtures, fittings, tenants work, improvements and betterments, business income, extra expense, merchandise, inventory/stock, contents, and personal property located on or in the Premises. Such insurance shall be in an amount equal to the full replacement cost of the aggregate of the foregoing and shall provide coverage comparable to the coverage in the standard ISO "All-Risk" or "Special" form, when such coverage is supplemented with the coverages required above. Property policy shall also include coverage for Plate Glass, where required by written contract.

Builders Risk insurance coverage may be provided by the general contractor on a blanket builders risk policy with limits adequate for the project, and evidencing the additional insureds as required in the Lease.

(2) Liability Insurance. General Liability, Umbrella/Excess Liability, Workers Compensation and Auto Liability coverage as follows:

(a) General Liability	$1,000,000 per occurrence $1,000,000 personal & advertising injury
(b) Products Liability	$2,000,000 products/completed operations aggregate

The General Contractor is required to maintain, during the construction period and up to 1 year after project completion, a General Liability insurance policy, covering bodily injury, personal injury, property damage, completed operations, with limits to include a $1,000,000 limit for blanket contractual liability coverage and adding Landlord as additional insured (including completed operations), primary & non-contributory, and waiver of subrogation as respects the project during construction and for completed operations up to 1 year after the end of the project. Landlord requires a copy of the ISO 20 10 11 85 Additional Insured endorsement, showing Landlord as an additional insured to the GC's policy.

(b) Auto Liability	$1,000,000 combined single limit each accident for bodily injury and property damage, hired and non-owned cover.

(c)	Workers Compensation Employers Liability	Statutory Limits $1,000,000 each accident* $1,000,000 each employee* $1,000,000 policy limit* * or such amounts as are customarily obtained by operators of comparable businesses

General Contractor shall ensure that any and all sub-contractors shall maintain equal limits of coverage for Workers Compensation/EL and collect insurance certificates verifying same.

(d)	Umbrella/Excess Liability	$5,000,000 per occurrence
(e)	Environmental Insurance	To the extent required by Landlord Contractors' commercial general liability/umbrella insurance policy(ies) shall include Landlord and Landlord's designees as additional insureds', and shall include a primary non-contributory provision. Liability policy shall contain a clause that the insurer may not cancel or materially change coverage without first giving Landlord thirty (30) days prior written notice, except cancellation for non-payment of premium, in which ten (10) days prior written notice shall be required.

(3) Deductibles. If any of the above insurances have deductibles or self-insured retentions, the Tenant and/or contractor (policy Named Insured) shall be responsible for the deductible amount.

All of the insurance policies required in this Exhibit 6 shall be written by insurance companies which are licensed to do business in the State where the property is located, or obtained through a duly authorized surplus lines insurance agent or otherwise in conformity with the laws of such state, with an A.M. Best rating of at least A and a financial size category of not less than VII. Tenant shall provide Landlord with certificates of insurance upon request, prior to commencement of the Tenant/contractor work, or within thirty (30) days of coverage inception and subsequent renewals or rewrites/replacements of any cancelled/non-renewed policies.

FIRST AMENDMENT TO LEASE AGREEMENT

This First Amendment to Lease Agreement ("**First Amendment**") is made effective as of April 7, 2020 ("**Effective Date**"), by and between the Board of Regents of The University of Texas System ("**Landlord**") and Ziopharm Oncology, Inc., a Delaware corporation ("**Tenant**").

RECITALS

WHEREAS, Landlord and Tenant entered into that certain Lease Agreement dated October 15, 2019 (the "**Existing Lease**") whereby Tenant leased from Landlord Building B of the El Rio Buildings, located at 8000 El Rio Street, Houston, Texas 77054, which contains approximately 8,443 rentable square feet of space (the "**Premises**").

WHEREAS, the built-in laboratory benches have been removed in connection with the buildout of the Premises, and Landlord desires to replace such benches with non-mobile, metal lab benches for which Landlord no longer has use ("**Replacement Benches**").

WHEREAS, Landlord and Tenant wish to amend the Existing Lease to document the delivery, installation, use and maintenance of the Replacement Benches, as more particularly described below. All references in the Existing Lease, and herein below to the "Lease" shall be references to the Existing Lease, as hereby amended.

AGREEMENT

NOW, THEREFORE, for and in consideration of the premises contained herein and in the Existing Lease and other good and valuable consideration, the receipt and legal sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

1. Adoption of Recitals and Defined Terms. The Recitals set forth above are adopted by reference, declared to be true, and incorporated herein for all purposes. Unless defined herein or the context clearly requires otherwise, all terms used in this First Amendment have the same meaning as in the Existing Lease.

2. Replacement Benches. On or before the date that the Premises have been expanded by an amendment to the Lease to include Suite 8038, Landlord shall, as part of the Delivery Condition of the Premises, deliver ten (10) Replacement Benches to Suite 8038 for Tenant's use during the Term. Tenant shall be responsible for relocating, leveling and installing the Replacement Benches in Suite 8030 at Tenant's sole cost and expense. In the event that Tenant no longer has use for the Replacement Benches after Landlord delivers same to Suite 8038, Tenant shall properly discard of same at its sole cost and expense (in no event shall Landlord's facilities or employees be utilized in connection with such disposal). Other than discarding the Replacement Benches or relocating the Replacement Benches from Suite 8038 to Suite 8030, Tenant shall not move the Replacement Benches without Landlord's prior written consent. During the Term, Tenant shall be responsible, at its sole cost and expense, for maintaining the Replacement Benches, including the balancing of same. In the event that Tenant does not discard of the Replacement Benches pursuant to the provisions above, then upon expiration or earlier termination of the Lease, Tenant shall surrender the Replacement Benches to Landlord in their as-is condition.

3. Counterparts. This First Amendment may be executed in any number of counterparts, all of which taken together shall constitute one and the same agreement, and any of the parties to this First Amendment may execute the First Amendment by signing any of the counterparts.

4. Performance of and Compliance with the Terms and Conditions of the Existing Lease. Landlord and Tenant each promise and agree to perform and comply with the terms, provisions and conditions of and the agreements in the Existing Lease, as modified hereby.

5. Ratification and Reaffirmation of Existing Lease. Landlord and Tenant each hereby ratify, affirm, and agree that the Existing Lease, as herein modified, represent the valid, binding and enforceable obligations of Landlord and Tenant, respectively. Except as expressly modified by this First Amendment, all of the terms and provisions of the Existing Lease remain unchanged and in full force and effect.

6. Applicable Law. Landlord and Tenant hereby agree that this First Amendment shall be governed and construed according to the laws of the State of Texas from time to time in effect.

7. Inurement. This First Amendment shall be binding on and inure to the benefit of Landlord and Tenant and their respective successors and assigns.

8. No Commission. Landlord and Tenant each warrant and represent to the other that no commission or fee is due or will be paid in connection with this First Amendment.

9. Entirety and Amendments. The Existing Lease, as expressly modified by this First Amendment, constitutes the sole and only agreement of the parties to the Existing Lease and supersedes any prior understandings or written or oral agreements between the parties concerning the lease of the Premises. The Existing Lease may be amended or supplemented only by an instrument in writing executed by the party against whom enforcement is sought.

10. Construction. Each party acknowledges that it and its counsel have reviewed this First Amendment and that the normal rule of construction shall not be applicable and there shall be no presumption that any ambiguities will be resolved against the drafting party in interpretation of this First Amendment.

11. Authority. Tenant warrants and represents that (a) Tenant has the full right, power and authority to enter into this First Amendment, (b) all requisite action to authorize Tenant to enter into this First Amendment and to carry out Tenant's obligations hereunder has been taken, and (c) the person signing on behalf of Tenant has been duly authorized by Tenant to sign this First Amendment on its behalf.

12. Paragraph Headings. The paragraph headings used herein are intended for reference purposes only and shall not be considered in the interpretation of the terms and conditions hereof.

[The remainder of this page is left intentionally blank.]

EXECUTED to be effective as of the Effective Date.

Landlord:

BOARD OF REGENTS OF THE
UNIVERSITY OF TEXAS SYSTEM

By: /s/ Ben Melson
Ben Melson
Senior Vice President and Chief Financial Officer

Approved as to Content:

The University of Texas M.D. Anderson Cancer Center

By: /s/Spencer Moore
Name: Spencer Moore
Title: Vice President and Chief Facilities Officer

Reviewed and Approved by
UTMDACC Legal Services for
UTMDACC Signature:
/s/ Katie Hester 4/9/2020

Tenant: ZIOPHARM ONCOLOGY, INC., a Delaware corporation

By: /s/ Kevin G. Lafond
Name: Kevin G. Lafond
Title: Chief Accounting Officer

Exhibit 10.41

SECOND AMENDMENT TO LEASE

This Second Amendment to Lease (this "Amendment"), is made as of the 7th day of April, 2020 (the "Effective Date"), by and between the BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, acting for the use and benefit of The University of Texas M. D. Anderson Cancer Center, an institution of The University of Texas System ("Landlord") and ZIOPHARM ONCOLOGY, INC., a Delaware corporation ("Tenant").

WITNESSETH:

Reference is hereby made to the following facts:

A. Landlord and Tenant entered into that certain Lease dated as of October 15, 2019 (the "Existing Lease"), for certain premises (the "Existing Premises") known as Suites 8030 and 8032, containing approximately 8,443 rentable square feet in the aggregate, within that certain building known as Building B of the El Rio Buildings, located at 8000 El Rio Street, Houston, Texas 77054 (as more particularly described in the Existing Lease, the "Building"). Contemporaneously herewith, Landlord and Tenant are entering into a First Amendment to Lease for delivery, installation, use and maintenance of the Replacement Benches from Landlord to Tenant. All capitalized words and phrases not otherwise defined herein shall have the meanings ascribed to them in the Existing Lease. The Existing Lease, as modified and amended by this Amendment, is referred to herein as the "Lease".

B. Tenant desires to lease additional premises from Landlord consisting of (i) approximately 2,770 rentable square feet within the Building, known as Suite 8036, and approximately 2,824 rentable square feet within the Building, known as Suite 8038, all as shown on Exhibit A attached hereto and incorporated by reference herein (the "Expansion Prime Premises"), and (ii) the generator premises located in the area depicted on Exhibit B-1B attached hereto (the "Expansion Generator Premises"), the rooftop premises located in the area depicted on Exhibit B-1C attached hereto (the "Expansion Rooftop Premises"), and the gas storage and tank premises located in the area depicted on Exhibit B-1D attached hereto (the "Expansion Gasses/Tank Premises", and collectively, the Expansion Prime Premises, the Expansion Generator Premises, the Expansion Rooftop Premises, and the Expansion Gasses/Tank Premises are the "Expansion Premises"), and Landlord agrees to lease the Expansion Premises to Tenant, and to modify and amend the Existing Lease, all in the manner hereinafter set forth.

NOW THEREFORE, in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt, sufficiency and delivery of which are hereby acknowledged, the Existing Lease is hereby amended as follows:

1. Lease of Expansion Premises. Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, the Expansion Premises for a Term commencing on the date (the "Expansion Premises Commencement Date") on which Landlord delivers the Expansion Premises to Tenant in the Delivery Condition and expiring on the Expiration Date, unless earlier terminated or extended, in accordance with the terms of the Lease. The lease and use of the Expansion Premises shall be upon and subject to all of the other terms and conditions of the Existing Lease, except as expressly set forth in this Amendment. The Expansion Premises Commencement Date is anticipated to occur on April 13, 2020 (the "Estimated Expansion Premises Commencement Date"). The "Expansion Premises Rent Commencement Date" shall mean the earlier to occur of (i) the date on which Tenant has completed Tenant's Expansion Premises Work (as hereinafter defined), or (ii) the date that is four (4) months after the Expansion Premises Commencement Date. From and after the Expansion Premises Commencement Date, except as expressly set forth herein, (v) each reference contained in the Existing Lease to the "Premises" shall be considered to be a reference to the Existing Premises and the Expansion Premises, collectively, (w) each reference contained in the Existing Lease to the "Prime Premises" shall be considered to be a reference to the existing Prime Premises and the Expansion Prime Premises, collectively, (x) each reference contained in the Existing Lease to the "Generator Premises", shall be considered to be a reference to the existing Generator Premises and the Expansion Generator Premises, collectively, (y) each reference contained in the Existing Lease to the "Rooftop Premises", shall be considered to be a reference to the existing Rooftop Premises and the Expansion Rooftop Premises, collectively, and (z) each reference contained in the Existing Lease to the "Gasses/Tank Premises", shall be considered to be a reference to the existing Gasses/Tank Premises and the Expansion Gasses/Tank Premises, collectively.

2. Rent for Expansion Premises. For and with respect to the Expansion Premises, commencing on the Expansion Premises Rent Commencement Date and continuing through the Expiration Date, Tenant shall pay to Landlord the Base Rent, Tenant's Share of Taxes, and all other Additional Rent and charges payable pursuant to the Lease in accordance with the terms and provisions of the Existing Lease, except as set forth herein.

a. Commencing on the Expansion Premises Rent Commencement Date, Tenant shall pay Base Rent with respect to the Expansion Premises as follows:

Period of Time	Annual Base Rent	Monthly Payment
Expansion Premises Lease Year 1	$ 138,003.98	$ 11,500.33
Expansion Premises Lease Year 2	$ 138,003.98	$ 11,500.33
Expansion Premises Lease Year 3	$ 142,144.10	$ 11,845.34
Expansion Premises Lease Year 4	$ 146,408.42	$ 12,200.70
Expansion Premises Lease Year 5	$ 150,800.68	$ 12,566.72
Expansion Premises Lease Year 6	$ 155,324.69	$ 12,943.72
Expansion Premises Lease Year 7	$ 159,984.44	$ 13,332.04

For purposes hereof, "Expansion Premises Lease Year" shall mean a twelve-month period beginning on the Expansion Premises Rent Commencement Date or any anniversary of the Expansion Premises Rent Commencement Date, except that if the Expansion Premises Rent Commencement Date does not fall on the first day of a calendar month, then the first Expansion Premises Lease Year shall begin on the Expansion Premises Rent Commencement Date and end on the last day of the month containing the first anniversary of the Expansion Premises Rent Commencement Date, and each succeeding Expansion Premises Lease Year shall begin on the day following the last day of the prior Expansion Premises Lease Year. The final Expansion Premises Lease Year shall end on the Expiration Date.

b. Without in any way limiting the generality of Section 1 hereof, Tenant's Share shall be calculated based upon the rentable area of the existing Prime Premises, as expanded to include the Expansion Prime Premises pursuant to the terms of this Amendment.

c. Without in any way limiting the generality of Section 1 hereof, Tenant shall be entitled to utilize Remaining Funds to satisfy all Rent obligations under this Amendment, and for the payment of costs incurred by Tenant in connection with Tenant's Expansion Premises Work, in each case subject to and in accordance with the terms of the Existing Lease, including, without limitation, Sections 5.1(b) and Exhibit 3 thereof.

3. Expansion Premises Utilities. Without in any way limiting the generality of Section 1 hereof, electricity and other utilities with respect to the Expansion Premises shall be utilized and paid for by Tenant in accordance with Article 9 of the Existing Lease.

4. Condition and Delivery of Expansion Premises.

a. Tenant has inspected the Expansion Premises and agrees (a) to accept possession of, and Landlord agrees to deliver, the Second Amendment Expansion Premises in the Delivery Condition, and (b) that except as aforesaid, Landlord has no obligation to perform any other work, supply any materials, incur any expense or make any alterations or improvements to prepare the Expansion Premises for Tenant's occupancy. In particular, Tenant acknowledges and agrees that Section 3.1 of the Existing Lease applies in its entirety to the Expansion Premises, but Tenant will not have a Termination right as set forth in Section 3.3 with respect to the Expansion Premises. Any work to be performed by Tenant to the Expansion Premises in connection with Tenant's initial occupancy of the Expansion Premises shall be hereinafter referred to as "Tenant's Expansion Premises Work" and shall be performed in accordance with the terms and conditions of the Existing Lease, including, without limitation, the terms and conditions of Section 11 and Exhibit 3 of the Existing Lease. Landlord hereby approves of Tenant's Expansion Premises Work; provided however, in the event Tenant's Expansion Premises Work (a) is materially inconsistent with the depiction of work attached hereto as Exhibit C, and (b) requires Landlord's prior approval in accordance with the terms and conditions of Section 11.1(a) of the Existing Lease, then Tenant shall submit to Landlord for approval a set of Design/ Development Plans, and/or Final Construction Drawings for Tenant's Expansion Premises Work in accordance with the terms of Exhibit 3 of the Existing Lease.

b. Landlord shall use diligent efforts to deliver the Expansion Premises to Tenant in the Delivery Condition not later than the Estimated Expansion Premises Commencement Date. However, except for Tenant's remedies set forth in this Section 4(b): (i) Tenant's sole remedies shall be a delay in the Expansion Premises Commencement Date, (ii) Tenant shall have no claim or rights against Landlord, and Landlord shall have no liability or obligation to Tenant in the event of delay in the Expansion Premises Commencement Date, and (iii) no delay in the Expansion Premises Commencement Date shall have any effect on the parties rights or obligations under this Lease. Without limiting the foregoing, as liquidated damages and the sole and exclusive remedies of Tenant on account thereof, (x) if the Expansion Premises Commencement Date has not occurred by the Estimated Expansion Premises Commencement Date, then for and with respect to each day between the Estimated Expansion Premises Commencement Date and the date on which the Expansion Premises Commencement Date actually occurs, Tenant shall receive a credit against the Rent payable under the Lease (to be applied to the Rent payable immediately after the Expansion Premises Rent Commencement Date) in an amount equal to the per diem Base Rent payable for the Expansion Premises, and (y) in addition, if (i) the Expansion Premises Commencement Date has not occurred by the date which is thirty (30) days following the Estimated Expansion Premises Commencement Date (the "Expansion Premises Cancellation Date"), and (ii) not less than fifteen (15) days prior to the delivery of a Termination Notice (as hereinafter defined) Tenant shall have delivered a Reminder Notice to Landlord (with applicable changes to conform to this Section 4(b)), then at any time after the Expansion Premises Cancellation Date and prior to the date on which the Expansion Premises Commencement Date actually occurs, Tenant may elect to terminate this Lease by giving Landlord a Termination Notice, with such termination to be effective immediately upon the giving by Tenant of such Termination Notice. If Tenant timely and validly terminates this Amendment in accordance with the foregoing provisions, this Amendment shall be null and void and of no further force and effect, and except as expressly and specifically set forth herein, the parties shall have no further liabilities, responsibilities, or obligations hereunder. The Rent credits set forth above shall be credited against amounts due and payable under this Lease, and in no event will Landlord be required to make any payment to Tenant with respect to any Rent credits that would otherwise be available to Tenant under this Section 4(b). If the Expansion Premises Commencement Date does not occur prior to the Expansion Premises Cancellation Date, and Tenant does not terminate this Lease in accordance with the foregoing provisions, then Tenant shall continue to accrue a credit against the Rent payable under this Lease in the amounts set forth above for and with respect to each day between the Estimated Expansion Premises Commencement Date and the date on which the Expansion Premises Commencement Date actually occurs.

5. Parking. From and after the Expansion Premises Commencement Date, the term "Parking Spaces" shall be amended to provide Tenant with up to fifty-six (56) unreserved parking spaces for Tenant's use, subject to and in accordance with the terms and conditions of Section 1.3(b) of the Existing Lease, including, without limitation, the obligation to pay the applicable Parking Charges.

6. Existing Lease Commencement Date. Landlord and Tenant acknowledge and agree that the Commencement Date under the Existing Lease occurred on November 1, 2019.

7. Brokerage. Tenant warrants and represents to Landlord, and Landlord warrants and represents to Tenant, that it has dealt with no broker or agent in connection with this Amendment. Tenant agrees to defend, indemnify, and hold Landlord harmless from and against any Claims arising in breach of the representation and warranty set forth in the immediately preceding sentence.

8. Miscellaneous. Tenant hereby represents and warrants to Landlord as follows: (i) the execution and delivery of this Amendment by Tenant has been duly authorized by all requisite corporate action; (ii) neither the Existing Lease nor the interest of the Tenant therein has been assigned, sublet, encumbered or otherwise transferred; (iii) to the actual knowledge of Tenant, there are no defenses or counterclaims to the enforcement of the Existing Lease or the liabilities and obligations of Tenant thereunder; (iv) neither Tenant nor, to the actual knowledge of Tenant, Landlord, is in breach or default of any of its respective obligations under the Existing Lease, (v) Landlord has made no representations or warranties, except as expressly and specifically set forth in the Existing Lease and this Amendment. Landlord hereby represents and warrants to Tenant as follows: (i) the execution and delivery of this Amendment by Landlord has been duly authorized by all requisite action; (ii) to the actual knowledge of Landlord, there are no defenses or counterclaims to the enforcement of the Existing Lease or the liabilities and obligations of Landlord thereunder; (iii) neither Landlord nor, to the actual knowledge of Landlord, Tenant, is in breach or default of any of its respective obligations under the Existing Lease, and (iv) Tenant has made no representations or warranties, except as expressly and specifically set forth in the Existing Lease and this Amendment. The submission of drafts of this document for examination and negotiation does not constitute an offer to lease, or a reservation of or option for, the Expansion Premises, and this Amendment shall not be binding upon Landlord or Tenant unless and until Landlord has executed and delivered to Tenant a fully-executed version of this Amendment. Except as expressly and specifically set forth in this Amendment, the Existing Lease is hereby ratified and confirmed, and all of the terms, covenants, agreements and provisions of the Existing Lease shall remain unaltered and unmodified and in full force and effect throughout the balance of the Term of the Lease.

9. Counterparts. This Amendment may be executed in any number of counterparts and by each of the undersigned on separate counterparts, which counterparts taken together shall constitute one and the same instrument. This Amendment may be executed by electronic signature, which shall be considered as an original signature for all purposes and shall have the same force and effect as an original signature. Without limitation, in addition to electronically produced signatures, “electronic signature” shall include faxed versions of an original signature or electronically scanned and transmitted versions (e.g., via pdf) of an original signature.

[Signature Page Follows]

EXECUTED as an instrument under seal as of the date first above-written.

LANDLORD

BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, for the use and benefit of The University of Texas M. D. Anderson Cancer Center

By: /s/ Ben Melson
Name: Ben Melson
Title: Senior Vice President and Chief Financial Officer

Approved as to Content:

THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER

By: /s/ Spencer Moore
Name: Spencer Moore
Title: VP and Chief Facilities Officer

Reviewed and Approved by
UTMDACC Legal Services for
UTMDACC Signature:
/s/ Chad Mavity 4/9/2020

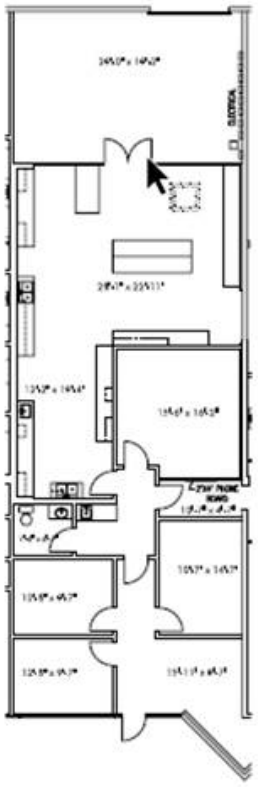
TENANT

ZIOPHARM ONCOLOGY, INC.,
a Delaware limited liability company

By: /s/ Kevin G. Lafond
Name: Kevin G. Lafond
Title: Chief Accounting Officer

EXHIBIT A

Floor Plan for Expansion Premises - 8036



B-1B

EXHIBIT A

Floor Plan for Expansion Premises - 8038

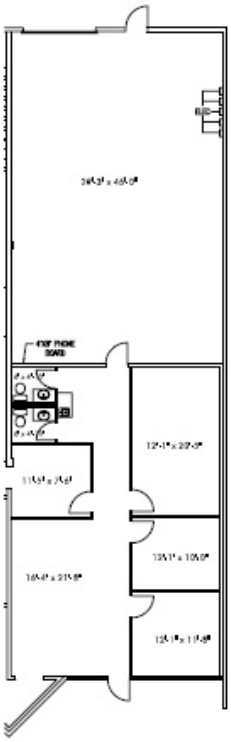


EXHIBIT B-1B

Expansion Generator Premises

B-2 -3-

EXHIBIT B-1C

Expansion Rooftop Premises

B-1C

EXHIBIT B-1D

Expansion Gasses/Tank Premises

B-1D

EXHIBIT C

Fit Plan of Tenant’s Expansion Premises Work

C-1

Exhibit 10.42

THIRD AMENDMENT TO LEASE

This Third Amendment to Lease (this "Amendment"), is made as of the 15th day of December, 2020 (the "Effective Date"), by and between the BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, acting for the use and benefit of The University of Texas M. D. Anderson Cancer Center, an institution of The University of Texas System ("Landlord") and ZIOPHARM ONCOLOGY, INC., a Delaware corporation ("Tenant").

WITNESSETH:

Reference is hereby made to the following facts:

A. Landlord and Tenant entered into that certain Lease (as heretofore amended, the "Existing Lease") dated as of October 15, 2019 (the "Original Lease"), as amended by that certain First Amendment to Lease dated as of April 7, 2020, and that certain Second Amendment to Lease dated as of April 7, 2020, for certain premises (the "Premises") known as Suites 8030, 8032, 8036 and 8038, containing approximately 14,037 rentable square feet in the aggregate, within that certain building known as Building B of the El Rio Buildings, located at 8000 El Rio Street, Houston, Texas 77054 (as more particularly described in the Existing Lease, the "Building"). All capitalized words and phrases not otherwise defined herein shall have the meanings ascribed to them in the Existing Lease. The Existing Lease, as modified and amended by this Amendment, is referred to herein as the "Lease".

B. Landlord and Tenant have agreed to modify and amend the Existing Lease, all in the manner hereinafter set forth.

NOW THEREFORE, in consideration of Ten Dollars ($10.00) and other good and valuable consideration, the receipt, sufficiency and delivery of which are hereby acknowledged, the Existing Lease is hereby amended as follows:

1. Rent Commencement Date; Expiration Date. Landlord and Tenant acknowledge and agree that (i) the Rent Commencement Date occurred on March 1, 2020, (ii) the Expansion Premises Commencement Date occurred on April 13, 2020, (iii) the Expansion Premises Rent Commencement Date occurred on August 13, 2020; and (iv) the Expiration Date is February 28, 2027.

2. Definition of Rent Year. The definition of "Rent Year" set forth in the Lease Summary Sheet of the Original Lease is hereby deleted in its entirety and replaced with the following:

"A twelve (12) month period beginning on the Rent Commencement Date or any anniversary of the Rent Commencement Date, except that if the Rent Commencement Date does not fall on the first day of a calendar month, then the first Rent Year shall begin on the Rent Commencement Date and end on the last day of the month containing the first anniversary of the Rent Commencement Date, and each succeeding Rent Year shall begin on the day following the last day of the prior Rent Year; provided that the last Rent Year shall end on the Expiration Date."

3. Definition of Tenant's Share. The definition of "Tenant's Share" set forth in the Lease Summary Sheet of the Original Lease is hereby deleted in its entirety and replaced with the following:

"A fraction, the numerator of which is the number of rentable square feet in the Prime Premises and the denominator of which is the number of rentable square feet in the Campus that is not exempt from taxation by the relevant taxing authority. As of the Effective Date of the Third Amendment to this Lease, Tenant's Share is 30.52%."

4. Taxes.

(a) Section 5.3(a) of the Original Lease is hereby deleted in its entirety and replaced with the following:

"(a) Landlord is an agency of the state of Texas. As such, Landlord does not pay real estate taxes or personal property taxes on property used and controlled by Landlord. Such exemption does not apply to the Premises when under the use and control of Tenant. "**Taxes**" shall mean the real estate taxes and other taxes, levies and assessments imposed upon the Campus and upon any personal property of Landlord used in the operation thereof, or on Landlord's interest therein or such personal property; charges, fees and assessments for transit, housing, police, fire or other services or purported benefits to the Campus (including without limitation any community preservation assessments); service or user payments in lieu of taxes; and any and all other taxes, levies, betterments, assessments and charges arising from the ownership, leasing, operation, use or occupancy of the Campus or based upon rentals derived therefrom, which are or shall be imposed by federal, state, county, municipal or other governmental authorities. Taxes shall not include any sales, inheritance, estate, succession, gift, franchise, rental, income or profit tax, capital stock tax, capital levy or excise, any income taxes arising out of or related to the ownership and operation of the Campus, or any interest or penalties resulting from the late payment of Taxes by Landlord (except to the extent due to Tenant's failure to make timely payments); provided, however, that if during the Term the present system of taxation of real or personal property shall be changed, any tax, excise, fee, levy, charge or assessment, however described, that may in the future be levied or assessed as a substitute for, in whole or in part, any tax, levy or assessment which would otherwise constitute Taxes, whether or not now customary or in the contemplation of the parties on the Execution Date of this Lease, shall constitute Taxes, but only to the extent calculated as if the Campus were the only real estate owned by Landlord. "Taxes" shall also include reasonable expenses (including without limitation legal and consultant fees) of tax abatement or other proceedings contesting assessments or levies."

(b) Section 5.3(e) of the Original Lease is hereby deleted in its entirety and replaced with the following:

"(e) **Part Years**. Tenant shall be responsible for the payment of Tenant's Share of Taxes for and with respect to the period of time commencing on the Commencement Date and ending on the last day of the Tax Period in which the Expiration Date or earlier termination of this Lease occurs."

(c) Notwithstanding any provision of the Existing Lease to the contrary, Tenant's monthly payments of Tenant's Share of Taxes shall commence on (i) the Commencement Date, with respect to the Premises demised under the Original Lease, and (ii) the Expansion Premises Commencement Date, with respect to the Expansion Premises.

5. Gas. Section 9.3 of the Original Lease is hereby deleted in its entirety and replaced with the following:

"**Gas**. Tenant shall contract with the applicable utility provider for gas service to the Premises, and shall pay all charges for gas furnished by the utility provider to the Premises, all at Tenant's sole cost and expense."

6. Premises Cleaning. Section 10.5 of the Original Lease is hereby deleted in its entirety and replaced with the following:

"**Premises Cleaning**. Tenant shall be responsible, at its sole cost and expense, for janitorial and removing trash from the Premises to Tenant's dumpster, and for providing biohazard disposal services for the Premises, including the laboratory areas thereof. Such services shall be performed by licensed (where required by law or governmental regulation), insured and qualified contractors and on a sufficient basis to ensure that the Premises are at all times kept neat and clean. Tenant shall maintain a dumpster and/or compactor on the Campus within a reasonable proximity to the Building for Tenant's disposal of non-hazardous and non-controlled substances, the location of which shall be approved by Landlord, such approval not to be unreasonably withheld, conditioned or delayed."

7. Force Majeure. Section 26.14 of the Original Lease is hereby deleted in its entirety and replaced with the following:

"**26.14 Force Majeure**. Other than for obligations under this Lease that can be performed by the payment of money (e.g., payment of Rent and maintenance of insurance), whenever a period of time is herein prescribed for action to be taken by either party hereto, such party shall not be liable or responsible for, and there shall be excluded from the computation of any such period of time, any delays due to strikes, riots, acts of God, shortages of labor or materials, war, acts of terrorism, national or regional emergency, or a pandemic, epidemic or other public health emergency or exigency, governmental laws, regulations, or restrictions, or any other causes of any kind whatsoever which are beyond the control of such party (collectively "**Force Majeure**"). In no event (i) shall financial inability of a party be deemed to be Force Majeure, and (ii) shall Force Majeure postpone or delay any of Tenant's remedies set forth in Section 3.2."

8. Landlord's Services. Exhibit 4 to the Original Lease is hereby amended by deleting the following:

"4. Trash disposal from the common dumpster serving the Building for disposal of non-hazardous and non-controlled substances."

9. Brokerage. Tenant warrants and represents to Landlord, and Landlord warrants and represents to Tenant, that it has dealt with no broker or agent in connection with this Amendment. Tenant agrees to defend, indemnify, and hold Landlord harmless from and against any Claims arising as a result of Tenant's breach of the representation and warranty set forth in the immediately preceding sentence.

10. Tenant hereby represents and warrants to Landlord as follows: (i) the execution and delivery of this Amendment by Tenant has been duly authorized by all requisite corporate action; (ii) neither the Existing Lease nor the interest of the Tenant therein has been assigned, sublet, encumbered or otherwise transferred; (iii) to the actual knowledge of Tenant, there are no defenses or counterclaims to the enforcement of the Existing Lease or the liabilities and obligations of Tenant thereunder; (iv) neither Tenant nor, to the actual knowledge of Tenant, Landlord, is in breach or default of any of its respective obligations under the Existing Lease, (v) Landlord has made no representations or warranties, except as expressly and specifically set forth in the Existing Lease and this Amendment. Landlord hereby represents and warrants to Tenant as follows: (i) the execution and delivery of this Amendment by Landlord has been duly authorized by all requisite action; (ii) to the actual knowledge of Landlord, there are no defenses or counterclaims to the enforcement of the Existing Lease or the liabilities and obligations of Landlord thereunder; (iii) neither Landlord nor, to the actual knowledge of Landlord, Tenant, is in breach or default of any of its respective obligations under the Existing Lease, and (iv) Tenant has made no representations or warranties, except as expressly and specifically set forth in the Existing Lease and this Amendment. This Amendment shall not be binding upon Landlord or Tenant unless and until Landlord has executed and delivered to Tenant a fully-executed version of this Amendment. Except as expressly and specifically set forth in this Amendment, the Existing Lease is hereby ratified and confirmed, and all of the terms, covenants, agreements and provisions of the Existing Lease shall remain unaltered and unmodified and in full force and effect throughout the balance of the Term of the Lease.

11. Counterparts. This Amendment may be executed in any number of counterparts and by each of the undersigned on separate counterparts, which counterparts taken together shall constitute one and the same instrument. This Amendment may be executed by electronic signature, which shall be considered as an original signature for all purposes and shall have the same force and effect as an original signature. Without limitation, in addition to electronically produced signatures, “electronic signature” shall include faxed versions of an original signature or electronically scanned and transmitted versions (e.g., via pdf) of an original signature.

[Signature Page Follows]

EXECUTED as an instrument under seal as of the date first above-written.

LANDLORD

BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, for the use and benefit of The University of Texas M. D. Anderson Cancer Center

By: /s/ Ben Melson
Name: Ben Melson
Title: Senior Vice President and Chief Financial Officer

Approved as to Content:

THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER

By: /s/ Spencer Moore
Name: Spencer Moore
Title: Vice President and Chief Facilities Officer

Reviewed and Approved by
UTMDACC Legal Services for
UTMDACC Signature:
/s/ Chad Mavity 12/15/2020

TENANT

ZIOPHARM ONCOLOGY, INC.,
a Delaware limited liability company

By: /s/ Kevin Lafond
Name: Kevin Lafond
Title: Chief Accounting Officer

BUILDING D, EL RIO BUILDINGS
8000 EL RIO STREET, HOUSTON, TEXAS

LEASE SUMMARY SHEET

Execution Date:	December 15, 2020
Tenant:	**ZIOPHARM ONCOLOGY, INC.**, a Delaware corporation
Landlord:	**BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM**, acting for the use and benefit of The University of Texas M. D. Anderson Cancer Center, an institution of The University of Texas System
Building:	Building D of the El Rio Buildings, 8000 El Rio Street, Houston, Texas 77054. The Building consists of approximately 35,482 rentable square feet, in addition to an adjacent parking lot (the "**Parking Lot**").
Campus:	All of the land described and/or depicted on Exhibit 2 (including the land on which the Building is located), together with the Building described above, the buildings now known as Buildings A, B, C and E and any other building and/or improvements constructed thereon, containing approximately 158,794 rentable square feet in the aggregate.
Premises:	The area in the Building known as Suites 8066, 8076 and 8078, containing approximately 18,111 rentable square feet in the aggregate, as depicted on the floor plans attached hereto as Exhibit 1A and made a part hereof (the "**Prime Premises**") together with the: **Generator Premises**, which are located in an area adjacent to the Building, as more particularly depicted on the Lease Plans. **Rooftop Premises**, which are located on the roof of the Building, as more particularly depicted on the Lease Plans. **Gasses/Tank Premises**, which are located in the loading dock area, as more particularly depicted on the Lease Plans. The term "**Premises**" shall mean the Prime Premises, Generator Premises, Rooftop Premises, and Gasses/Tank Premises, as applicable. The Premises are shown the Lease Plans attached hereto as Exhibit 1A, Exhibit 1B, Exhibit 1C, and Exhibit 1D, and made a part hereof (the "**Lease Plans**"). Landlord and Tenant stipulate and agree that the rentable area of the Premises, Building and Campus are correct and shall not be remeasured. The Prime Premises shall extend to the interior surface of all exterior walls and the interior surface of the roof of the Building (i.e., it shall be inclusive of all interior walls and ceiling rafters).

Property:	The Building, the Parking Lot, and the land on which the Building and Parking Lot are located, together with any other improvements thereon.
Parking Areas:	The parking structures (surface lots and parking decks, including the Parking Lot adjacent to the Building) located on the Campus that Landlord provides for parking by all tenants of space on the Campus.
Term Commencement Date, or Commencement Date:	The earlier to occur of (i) the date that Tenant commences to use the Premises for any Permitted Use, or (ii) the date on which Landlord delivers the Premises to Tenant in the Delivery Condition.
Rent Commencement Date:	The earlier to occur of (i) the date on which Tenant has completed Tenant's Work, or (ii) the date which is four (4) months following the Commencement Date.
Delivery Condition:	The Premises shall be delivered to Tenant free of all occupants and their possessions, in compliance with all applicable Legal Requirements, and otherwise in their current "as is" "where is" condition.
Building B Lease:	That certain Lease Agreement dated as of October 15, 2019, by and between Landlord and Tenant, as amended by that certain First Amendment to Lease dated as of April 7, 2020, that certain Second Amendment to Lease dated as of April 7, 2020, and that certain Third Amendment to Lease dated on or about the date hereof.
Expiration Date:	Seven (7) years after the Rent Commencement Date, except that if the Rent Commencement Date does not occur on the first day of a calendar month, then the Expiration Date shall be the last day of the calendar month in which the seventh (7^{th}) anniversary of the Rent Commencement Date occurs.
Extension Term:	Subject to Section 1.2 below, one (1) extension term of five (5) years.
Permitted Uses:	Subject to Legal Requirements, general office, research, development laboratory and manufacturing (including Good Manufacturing Practice (GMP) manufacturing) use, and other ancillary uses (including, but not limited to, storage uses) related to the foregoing.

Base Rent:

RENT YEAR	ANNUAL BASE RENT	MONTHLY PAYMENT
Year 1	$446,798.37	$37,233.20
Year 2	$446,798.37	$37,233.20
Year 3	$460,202.32	$38,350.19
Year 4	$474,008.39	$39,500.70
Year 5	$488,228.64	$40,685.72
Year 6	$502,875.50	$41,906.29
Year 7	$517,961.77	$43,163.48

Additional Rent All sums other than Base Rent payable by Tenant to Landlord under this Lease.

Rent Year: A twelve (12) month period beginning on the Rent Commencement Date or any anniversary of the Rent Commencement Date, except that if the Rent Commencement Date does not fall on the first day of a calendar month, then the first Rent Year shall begin on the Rent Commencement Date and end on the last day of the month containing the first anniversary of the Rent Commencement Date, and each succeeding Rent Year shall begin on the day following the last day of the prior Rent Year; provided that the last Rent Year shall end on the Expiration Date.

Tenant's Share: A fraction, the numerator of which is the number of rentable square feet in the Prime Premises and the denominator of which is the number of rentable square feet in the Campus that is not exempt from taxation by the relevant taxing authority. As of the Execution Date, Tenant's Share is 39.38%.

Business Days: All days during the Term except Saturdays, Sundays, and days observed in the State of Texas as legal holidays.

EXHIBIT 1A	LEASE PLAN – PRIME PREMISES
EXHIBIT 1B	LEASE PLAN – GENERATOR PREMISES
EXHIBIT 1C	LEASE PLAN – ROOFTOP PREMISES
EXHIBIT 1D	LEASE PLAN – GASSES/TANK PREMISES
EXHIBIT 2	DESCRIPTION/PLAN OF CAMPUS
EXHIBIT 3	WORK LETTER
EXHIBIT 3-1	FIT PLAN OF TENANT'S INITIAL WORK
EXHIBIT 4	LANDLORD'S SERVICES
EXHIBIT 5	INTENTIONALLY OMITTED
EXHIBIT 6	TENANT WORK INSURANCE SCHEDULE

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THIS INDENTURE OF LEASE (this "**Lease**") is hereby made and entered into on the Execution Date by and between Landlord and Tenant.

Each reference in this Lease to any of the terms and titles contained in any Exhibit attached to this Lease shall be deemed and construed to incorporate the data stated under that term or title in such Exhibit. All capitalized terms not otherwise defined herein shall have the meanings ascribed to them as set forth in the Lease Summary Sheet which is attached hereto and incorporated herein by reference.

1. LEASE GRANT; TERM; APPURTENANT RIGHTS; EXCLUSIONS

1.1 Lease Grant.

Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, the Premises upon and subject to terms and conditions of this Lease, for a term of years commencing on the Term Commencement Date and, unless earlier terminated or extended pursuant to the terms hereof, ending on the Expiration Date (the "**Initial Term**"; the Initial Term and any duly exercised Extension Term are hereinafter collectively referred to as the "**Term**").

1.2 Extension Term.

(a) Provided there is no Event of Default as of the date of the Extension Notice, Tenant shall have the option to extend the Term for one (1) additional term of five (5) years (the "**Extension Term**"), commencing as of the expiration of the Initial Term. Tenant must exercise such option to extend by giving Landlord written notice (the "**Extension Notice**") on or before the date that is no less than six (6) months prior to the expiration of the then-current term of this Lease, *time being of the essence*. Upon the timely giving of such notice, the Term shall be deemed extended upon all of the terms and conditions of this Lease, except that Base Rent during the Extension Term shall be as set forth in Section 1.2(b) below. If Tenant fails to give timely notice, as aforesaid, Tenant shall have no further right to extend the Term. Notwithstanding the fact that Tenant's proper and timely exercise of such option to extend the Term shall be self-executing, the parties shall promptly execute a lease amendment reflecting such Extension Term after Tenant exercises such option. The execution of such lease amendment shall not be deemed to waive any of the conditions to Tenant's exercise of its rights under this Section 1.2.

(b) The Base Rent during the Extension Term shall be as follows:

Period of Time	Base Rent Per Rentable Square Foot	Annual Base Rent	Monthly Payment
Extension Term Rent Year 1	$ 29.46	$533,500.63	$44,458.39
Extension Term Rent Year 2	$ 30.34	$549,505.64	$45,792.14
Extension Term Rent Year 3	$ 31.25	$565,990.81	$47,165.90
Extension Term Rent Year 4	$ 32.19	$582,970.54	$48,580.88
Extension Term Rent Year 5	$ 33.15	$600,459.65	$50,038.30

1.3 Memorandum of Lease.

Neither party shall record this Lease, but each of the parties hereto agrees to join in the execution, in recordable form, of a statutory memorandum of lease in Tenant's reasonable form, which memorandum of lease may be recorded by Tenant with appropriate registry of (the "**Registry**") at Tenant's sole cost and expense. If a memorandum of lease was previously recorded with the Registry, upon the expiration or earlier termination of this Lease, Landlord shall deliver to Tenant a notice of termination of lease and Tenant shall promptly execute and deliver the same to Landlord for Landlord's execution and recordation with the Registry. Should Tenant not deliver to Landlord an executed notice of termination with ten (10) days, Landlord may unilaterally file a release of memorandum of lease.

1.4 Appurtenant Rights.

(a) Common Areas. Subject to the terms of this Lease and the Rules and Regulations (hereinafter defined), Tenant shall have, as appurtenant to the Premises, the right to use in common with other tenants of the Campus, the following areas (such areas are hereinafter referred to as the "**Common Areas**"): (i) common walkways, streets, driveways, loading docks and loading areas necessary for access to the Premises, Building and Parking Areas, (ii) the Parking Areas, and (iii) other areas and facilities located in the Building, on the Land, or elsewhere on the Campus designated by Landlord from time to time for the common use of tenants of the Building and other entitled thereto. Except as provided under Sections 2.1 and 2.2, Landlord shall not change the Common Areas in a way as to alter or diminish the aggregate quantity, quality, utility or character thereof or interfere with Tenant's access to the Premises in more than a de minimis manner.

(b) Parking. During the Term, Landlord shall, subject to the terms hereof, make available up to the Required Parking Allocation (as hereinafter defined) for Tenant's use at the prevailing monthly rate for tenants of the Campus (which rate is currently $50 per pass, per month) (the "**Parking Charges"**) in the Parking Lot (the "**Parking Spaces**"). Said Parking Spaces will be on an unassigned, non-reserved basis, and shall be subject to such Rules and Regulations, as may be in effect for the use of the parking areas from time to time. Reserved and handicap parking spaces must be honored. Tenant shall pay such Parking Charges solely with respect to the Parking Spaces Tenant elects to use (which election may be changed from time to time upon not less than five (5) Business Days' prior notice) directly to Landlord's parking office, pursuant to written instructions to be provided to Tenant prior to the Commencement Date. The term "**Required Parking Allocation**" shall mean the number of unreserved parking spaces mutually agreed to by Landlord and Tenant, which (i) shall not be less than the number of parking spaces calculated by multiplying the total number of parking spaces on the Campus by a fraction, the numerator of which is the number of rentable square feet in the Prime Premises and the denominator of which is the number of rentable square feet in the Campus (in each case, as of the Effective Date), and (ii) shall not exceed sixty (60) parking spaces. Landlord and Tenant shall work cooperatively and in good faith to mutually agree upon the Required Parking Allocation, and shall memorialize such agreement in writing upon either party's request.

1.5 Tenant's Access. From and after the Term Commencement Date and until the end of the Term, Tenant shall have access to the Premises twenty-four (24) hours a day, seven (7) days a week, subject to Landlord's reasonable Building security requirements, Legal Requirements, the Rules and Regulations, the terms of this Lease, and Force Majeure (hereinafter defined).

2. RIGHTS RESERVED TO LANDLORD

2.1 Additions and Alterations. Landlord reserves the right, at any time and from time to time, to make such changes, alterations, additions, improvements, repairs or replacements in or to the Property (including the Premises but, with respect to the Premises, only for purposes of repairs, maintenance, replacements and the exercise of any other rights expressly reserved to Landlord herein) and the fixtures and equipment therein, as well as in or to the street entrances and/or the Common Areas, as it may deem necessary or desirable, provided, however, that there be no obstruction of permanent access to, or interference with the use and enjoyment of, the Premises by Tenant. Subject to the foregoing, Landlord expressly reserves the right to temporarily close all, or any portion, of the Common Areas for the purpose of making repairs or changes thereto.

2.2 Additions to the Property. Landlord may at any time or from time to time (i) construct additional building(s) and improvements and related site improvements (collectively, "**Future Development**") in all or any part of the Property and/or (ii) change the location or arrangement of any improvement outside the Building in or on the Property or all or any part of the Common Areas, or add or deduct any land to or from the Property; provided that there shall be no increase in Tenant's obligations or interference with Tenant's rights under this Lease in connection with the exercise of the foregoing reserved rights.

2.3 Name and Address of Building. Landlord reserves the right at any time and from time to time to change the name or address of the Building and/or the Property, provided Landlord gives Tenant at least three (3) months' prior written notice thereof.

2.4 Landlord's Access.

(a) Subject to the terms hereof, Tenant shall (i) upon reasonable advance notice, and in any event upon at least one (1) Business Day's prior written notice (except that no notice shall be required in emergency situations), permit Landlord and any holder of a Mortgage (hereinafter defined) (each such holder, a "**Mortgagee**"), and the agents, representatives, employees and contractors of each of them, where accompanied in non-emergency situations by a representative of Tenant (so long as Tenant shall make such representative available upon at least one (1) Business Day's request), to have reasonable access to the Premises at all reasonable hours for the purposes of inspection, making repairs, replacements or improvements in or to the Premises or the Building or equipment therein (including, without limitation, sanitary, electrical, heating, air conditioning or other systems), complying with all applicable laws, ordinances, rules, regulations, statutes, by-laws, court decisions and orders and requirements of all public authorities (collectively, "**Legal Requirements**"), or exercising any right reserved to Landlord under this Lease; (ii) permit Landlord and its agents and employees, at reasonable times, upon reasonable advance notice (but not less than three (3) Business Days), to show the Premises during normal business hours (i.e. Monday – Friday 7 A.M. - 6 P.M., Saturday 7 A.M. – 12 P.M., excluding federal and state holidays) ("**Normal Business Hours**") to any prospective Mortgagee or purchaser of the Building and/or the Property or of the interest of Landlord therein, and, during the last twelve (12) months of the Term or at any time after the occurrence of an Event of Default, prospective tenants; and (iii) upon reasonable prior written notice from Landlord (but not less than three (3) Business Days, provided that no notice shall be required in emergency situations), permit Landlord and its agents, at Landlord's sole cost and expense, to perform environmental audits, environmental site investigations and environmental site assessments ("**Site Assessments**") in, on, under and at the Premises and the Land, it being understood that Landlord shall repair any damage arising as a result of the Site Assessments at Landlord's sole cost and expense, and such Site Assessments may include both above and below the ground testing and such other tests as may be necessary or appropriate to conduct the Site Assessments. Except to the extent arising as a result of the gross negligence or willful misconduct of any of Tenant and/or Tenant's agents, servants, employees, consultants, contractors, subcontractors, invitees, licensees and/or subtenants (collectively with Tenant, the "**Tenant Parties**"), Landlord's entry shall be at its sole risk.

(b) Except in emergency situations, anyone who has access to any portion of the Premises pursuant to this Section 2.4 after Tenant has first commenced to use the Premises for the Permitted Uses may, at Tenant's election, be subject to Tenant's reasonable security measures and protocols, which may include limiting access under Section 2.4(a)(ii) to Normal Business Hours, requiring that any party accessing the Premises under Section 2.4(a)(ii) execute a commercially reasonable confidentiality agreement, requiring the wearing of an ID badge, and obligating visitors to comply with reasonable protocols so as protect confidential information contained within the Premises. Tenant may identify certain areas of the Premises that require limited access and strict security measures ("**Secure Areas**") by written notice to Landlord from time to time; provided that all GMP manufacturing areas located within the Premises shall be considered Secure Areas for all purposes hereunder. Except in the event of an emergency threatening personal injury or damage to property or a violation of any Legal Requirement, and except as otherwise approved by Tenant, any entry in the Secure Areas must be done in the presence of a representative of Tenant so long as Tenant makes such representative available upon at least one (1) Business Day's advance notice. Notwithstanding the foregoing, in case of emergency, Landlord may enter any part of the Premises without prior notice or a Tenant's representative; provided that Landlord provides Tenant with notice of such entry as soon as reasonably possible thereafter and Landlord takes reasonable precautions to protect confidentiality, and the health and safety of its entrants. The parties hereto acknowledge that all confidentiality provisions, as they apply to Landlord, are potentially subject to the provisions of the Texas Public Information Act, provided that the foregoing acknowledgement shall in no way derogate from the terms and conditions of Section 26.12(c) of this Lease.

(c) Except in the event of an emergency, (i) Landlord shall consult with Tenant in connection with the scheduling of all such access under this Section 2.4; (ii) to the extent such access shall cause material interference with Tenant's business operations, Landlord shall, at Tenant's request, schedule any such entry pursuant to Sections 2.4(a)(i) and (iii) after Normal Business Hours to the extent reasonably practicable in good faith.

(d) Any provision of this Lease that requires or gives Landlord the right to enter the Premises during the Term shall be governed by the provisions of this Section 2.4 and this Article 2.

2.5 Pipes, Ducts and Conduits. Tenant shall permit Landlord to erect, use, maintain and relocate pipes, ducts and conduits in and through the Premises, provided the same are, to the extent reasonably practicable, located to the exterior of interior walls, above the ceiling, or below the floor slab of the Premises, and if not reasonably practicable, the same shall not reduce the floor area by more than a de minimis amount or adversely affect the appearance or utility of the Premises.

2.6 Minimize Interference. Except in the event of an emergency, Landlord shall, in connection with the exercise of any of the foregoing rights under this Article 2 (and subject to the other limitations of this Article 2), (x) use reasonable efforts to minimize any interference with Tenant's business operations and use and occupancy of the Premises, Parking Lot and other Common Areas in accordance with the terms of this Lease, (y) not reduce the floor area by more than a de minimis amount and (z) not materially adversely affect the appearance or utility of the Premises. Notwithstanding anything to the contrary, Landlord shall not change the Common Areas in a way as to alter or diminish the aggregate quantity, quality, utility or character thereof or interfere with Tenant's access to the Premises in more than a de minimis manner. In exercising its reserved rights under this Article 2, Landlord agrees as follows: it shall require all workers to use reasonable efforts to protect all improvements, equipment, surfaces, finishes, fixtures, furnishings and personal property of Tenant in the Premises, and to use reasonable efforts to minimize the dispersion of construction dust and dirt throughout the Premises, including sufficient use of drop cloths and drapes in a manner consistent with good and accepted construction practices in occupied space (taking into consideration the particular use of such space); upon completion of all such work, Landlord shall leave the Premises free of all construction dirt, debris, supplies and construction-related equipment and shall restore the Premises to substantially the condition they were in prior to such work; and if as a result of such work more than 10 useable square feet of the Premises have been permanently rendered unusable, then there shall be a ratable adjustment of Base Rent. In exercising its reserved rights under this Article 2, Landlord shall not have the right to reduce the number of usable square feet in the Premises except (a) as permitted under Section 2.5 above, or (b) in a de minimis amount to the extent necessary in order to perform Landlord's obligations under Section 19.1 below, and then only (i) to the extent compliance with Legal Requirements may not be accomplished by using space outside the Premises, and (ii) after consulting with Tenant with respect thereto.

3. CONDITION OF PREMISES; CONSTRUCTION.

3.1 Condition of Premises. Tenant acknowledges and agrees that Landlord has disclosed the existence of certain foundation defects at the Premises, Building and Campus. Tenant has had the opportunity to enter and inspect the Premises to view and assess such foundation defects. Landlord represents and warrants to Tenant that it has provided Tenant with copies of all reports, studies and other assessments in its possession or control related to such foundation defects. Notwithstanding anything in this Lease to the contrary, including but not limited to the insurance and indemnification obligations set forth in Article 14, except to the extent such damage, claims or losses arise from the willful misconduct of Landlord or any of the Landlord Parties, Tenant waives any claim and agrees to hold Landlord harmless for any damage, claims or losses to Tenant's improvements, personal property or equipment as a result of or related to defects in the foundation of the Building. Tenant acknowledges and agrees that, except for Landlord's obligation to deliver the Premises in the Delivery Condition, and except as otherwise expressly set forth in this Lease, Tenant is leasing the Premises in their "**AS IS**," "**WHERE IS**" condition and with all faults on the Execution Date, without representations or warranties, express or implied, in fact or by law, of any kind, and without recourse to Landlord. Tenant's commencement of business operations from the Premises shall be conclusive evidence, as against Tenant, that the Premises and the Building were in a good and satisfactory condition as required by the Lease. Notwithstanding any provision of this Section 3.1 to the contrary, nothing in this Section 3.1 shall in any way modify or derogate from Landlord's obligations to maintain the Building and Premises in accordance with the terms and conditions of this Lease (including, without limitation, Section 10.2 hereof).

3.2 Delivery of Premises.

(a) Landlord shall use diligent efforts to deliver the Premises to Tenant in the Delivery Condition not later than January 1, 2021 (the "**Estimated Term Commencement Date**"). However, except for Tenant's remedies set forth in this Section 3.2: (i) Tenant's sole remedies shall be a delay in the Term Commencement Date, (ii) Tenant shall have no claim or rights against Landlord, and Landlord shall have no liability or obligation to Tenant in the event of delay in the Term Commencement Date, and (iii) no delay in the Term Commencement Date shall have any effect on the parties rights or obligations under this Lease. Without limiting the foregoing, as liquidated damages and the sole and exclusive remedies of Tenant on account thereof, (x) if the Term Commencement Date has not occurred by the Estimated Term Commencement Date, then for and with respect to each day between the Estimated Term Commencement Date and the date on which the Term Commencement Date actually occurs, Tenant shall receive a credit against the Rent payable under this Lease (to be applied to the Rent payable immediately after the Rent Commencement Date) in an amount equal to the per diem Base Rent payable for the Premises, and (y) in addition, if (i) the Term Commencement Date has not occurred by February 1, 2021 (the "**Lease Cancellation Date**"), and (ii) not less than fifteen (15) days prior to the delivery of a Termination Notice (as hereinafter defined) Tenant shall have delivered a Reminder Notice (as hereinafter defined) to Landlord, then at any time after the Lease Cancellation Date and prior to the date on which the Term Commencement Date actually occurs, Tenant may elect to terminate this Lease by giving Landlord a Termination Notice, with such termination to be effective immediately upon the giving by Tenant of such Termination Notice. If Tenant timely and validly terminates this Lease in accordance with the foregoing provisions, this Lease shall be null and void and of no further force and effect, and except as expressly and specifically set forth herein, the parties shall have no further liabilities, responsibilities, or obligations hereunder. The Rent credits set forth above shall be credited against amounts due and payable under this Lease, and in no event will Landlord be required to make any payment to Tenant with respect to any Rent credits that would otherwise be available to Tenant under this Section 3.2. If the Term Commencement Date does not occur prior to the Lease Cancellation Date, and Tenant does not terminate this Lease in accordance with the foregoing provisions, then Tenant shall continue to accrue a credit against the Rent payable under this Lease in the amounts set forth above for and with respect to each day between the Estimated Term Commencement Date and the date on which the Term Commencement Date actually occurs.

(b) Definitions.

(i) For purposes of this Section 3.2 only, a "**Reminder Notice**" shall mean a written notice delivered by Tenant to Landlord stating the following in capitalized and bold type on the first page of such notice: "**IN ACCORDANCE WITH AND SUBJECT TO SECTION 3.2 OF THE LEASE, IF THE COMMENCEMENT DATE DOES NOT OCCUR BY THE LEASE CANCELLATION DATE, THE TENANT MAY TERMINATE THE LEASE. LANDLORD IS HEREBY NOTIFIED THAT THE COMMENCEMENT DATE HAS NOT OCCURRED AS OF THE DATE OF THIS NOTICE**"; and a "**Termination Notice**" shall mean a written notice delivered by Tenant to Landlord stating the following in capitalized and bold type on the first page of such notice: "**IN ACCORDANCE WITH AND SUBJECT TO THE TERMS AND CONDITIONS OF SECTION 3.2 OF THE LEASE, TENANT HEREBY ELECTS TO TERMINATE THE LEASE.**"

3.3 Foundation Defects; Right to Terminate.

(a) Landlord acknowledges that Tenant intends to perform certain studies and assessments related to the foundation of the Building ("**Foundation Studies**"). In the event Tenant, in its sole discretion, is dissatisfied with the results of any Foundation Studies (a "**Cancellation Event**"), then subject to the full and complete satisfaction of the Cancellation Conditions Precedent (as hereinafter defined), in accordance with the provisions of this Section 3.3, Tenant shall have the irrevocable option to terminate this Lease (a "**Cancellation**"). The conditions precedent (the "**Cancellation Conditions Precedent**") to the effectiveness of any such Cancellation shall be as follows: (i) Tenant shall deliver written notice (a "**Cancellation Notice**") of such Cancellation to Landlord by not later than the date which is thirty (30) days following the Execution Date; (ii) the effective date of any such Cancellation (the "**Cancellation Date**") shall be a date set forth in Tenant's Cancellation Notice, but in no event more than forty-five (45) days following the Execution Date; and (iii) on the Cancellation Date, no Event of Default is then continuing.

(b) Provided that all of the Cancellation Conditions Precedent have been fully and completely satisfied, then effective as of the Cancellation Date, this Lease, and the rights of Tenant with respect to the Premises, shall terminate and expire with the same force and effect as if such Cancellation Date had originally been specified as the Expiration Date. Prior to the later of (such later date, the "**Surrender Date**") (i) the Cancellation Date, and (ii) the date on which Tenant actually surrenders and yields-up the Premises, Tenant shall comply with all of the terms and provisions of this Lease and shall perform all of its obligations hereunder. By not later than the Cancellation Date, Tenant shall surrender and yield-up the Premises in the condition in which the Premises are required to be surrendered pursuant to Section 21.1 at the expiration of the Term. All Tenant's Property and Alterations of any kind, nature or description remaining in the Premises after the Surrender Date shall be and become the property of Landlord and may be disposed of by Landlord, without payment from Landlord and without the necessity to account therefor to Tenant.

(c) Effective as of the Cancellation Date, Landlord shall be released from any and all obligations and liabilities thereafter accruing under this Lease. Nothing contained herein shall constitute a waiver, limitation, amendment, or modification of any of the liabilities and obligations of Landlord under this Lease which accrue or arise prior to the Cancellation Date. Effective as of the Surrender Date, Tenant shall be released from any and all liabilities and obligations thereafter accruing under this Lease. Nothing contained herein shall constitute a waiver, limitation, amendment, or modification of any of the liabilities and obligations of Tenant under this Lease which accrue or arise prior to the Surrender Date.

(d) Without limiting the foregoing, if Tenant fails to yield up and surrender the Premises by the Cancellation Date, then for and with respect to each day between the Cancellation Date and the Surrender Date, Tenant shall pay a holdover charge at the rate set forth in Section 21.3. Nothing herein contained shall constitute a release, waiver, limitation, or restriction of any rights or remedies of Landlord on account of Tenant's failure to surrender the Premises by the Cancellation Date, including, without limitation, any rights or remedies afforded to Landlord in Sections 21.1 and 21.3.

(e) The foregoing provisions shall be self-operative; provided, however, on the request of either party Landlord and Tenant will enter into a mutually satisfactory amendment to this Lease evidencing such Cancellation of this Lease. Time is of the essence of this Section 3.3.

4. USE OF PREMISES

4.1 Permitted Uses. During the Term, Tenant shall use the Premises only for the Permitted Uses and for no other purposes. Service and utility areas (whether or not a part of the Premises) shall be used only for the particular purpose for which they are designed. Tenant shall keep the Premises equipped with appropriate safety appliances to the extent required by applicable laws or insurance requirements.

4.2 Prohibited Uses.

(a) Notwithstanding any other provision of this Lease, Tenant shall not use the Premises or the Building, or any part thereof, or suffer or permit the use or occupancy of the Premises or the Building or any part thereof by any of the Tenant Parties (i) in violation of Legal Requirements; (ii) in a manner which (taking into account the use of the Building as a combination laboratory, research and development and office building and the Permitted Uses) shall (a) materially impair the appearance of the Building; (b) materially impair, interfere with or otherwise diminish the quality of any of the Building services or the proper and economic heating, cleaning, ventilating, air conditioning or other servicing of the Building or Premises, or the use or occupancy of any of the Common Areas; or (c) cause harmful air emissions, laboratory odors or noises or any unusual or other objectionable odors, noises or emissions to emanate from the Premises in violation of Legal Requirements; or (iii) in a manner which is inconsistent with the operation and/or maintenance of the Building as a first-class combination office, research, development and laboratory facility (including GMP manufacturing).

(b) With respect to the use and occupancy of the Premises and the Common Areas, Tenant will not: (i) place or maintain any signage (except as set forth in Article 12 below), trash, refuse or other articles in any exterior vestibule or entry of the Premises, on the footwalks or corridors adjacent thereto or elsewhere on the exterior of the Premises, nor obstruct any driveway, corridor, footwalk, parking area, mall or any other Common Areas; (ii) permit undue accumulations of or burn garbage, trash, rubbish or other refuse within or without the Premises; (iii) receive or ship articles of any kind outside of those areas reasonably designated by Landlord; or (iv) conduct or permit to be conducted any auction, going out of business sale, bankruptcy sale (unless directed by court order), or other similar type sale in or connected with the Premises.

5. RENT; ADDITIONAL RENT

5.1 Base Rent.

(a) Commencing as of the Rent Commencement Date and continuing thereafter throughout the remainder of the Term, Tenant shall pay Base Rent to Landlord in equal monthly installments, in advance and without demand on the first day of each month for and with respect to such month. Unless otherwise expressly provided herein, the payment of Base Rent, Additional Rent and other charges reserved and covenanted to be paid under this Lease with respect to the Premises (collectively, "**Rent**") shall commence on the Rent Commencement Date, and shall be prorated for any partial months. Rent shall be payable to Landlord or, if Landlord shall so direct in writing, to Landlord's agent or nominee, in lawful money of the United States which shall be legal tender for payment of all debts and dues, public and private, at the time of payment.

(b) Pursuant to the terms of (i) that certain Research and Development Agreement, by and between Landlord and Tenant dated as of August 17, 2015 (as amended, the "**Existing R&D Agreement**"), and (ii) that certain 2019 Research and Development Agreement, by and between Landlord and Tenant dated on or about the date hereof (the "**2019 R&D Agreement**"), Tenant has deposited certain funds with Landlord or committed certain amounts to reimburse Landlord for cost incurred under such agreement. Notwithstanding any provision of this Lease to the contrary, the remaining balance of the funds deposited or committed under the Existing R&D Agreement and the 2019 R&D Agreement (collectively, the "**Remaining Funds**") may, at Tenant's sole election, be applied to the payment of any and all Rent obligations under this lease. Tenant may elect in writing whether to first apply the remaining balance of the funds deposited or committed under the Existing R&D Agreement or the 2019 R&D Agreement. Upon such election to apply any Remaining Funds towards Rent due under this Lease, (i) with respect to Remaining Funds deposited under the Existing R&D Agreement, the applicable portion of Rent shall be debited by Landlord from the Remaining Funds on or before the first day of each calendar month during the Term, and (ii) with respect to Remaining Funds committed under the 2019 R&D Agreement, Tenant shall pay such amounts to Landlord in accordance with the terms and conditions of this Lease, and deliver notice to Landlord that such funds are being paid out of Remaining Funds under the 2019 R&D Agreement. The foregoing shall in no way derogate from Landlord's responsibility to invoice Tenant for amounts due hereunder, and not more than thirty (30) days following any application of any Remaining Funds, Landlord shall deliver to Tenant a statement reflecting such applied amounts. In no event will more than $25,000,000 in Remaining Funds be used to pay amounts due to Landlord under this Lease and the Building B Lease.

5.2 Costs to Operate the Campus, Building and Land. Landlord acknowledges and agrees that (i) Landlord's good faith estimate of the portion of the costs and expenses associated with the operation, maintenance, repair and replacement of the Campus and Property (including, without limitation, costs and expenses associated with Landlord's Services set forth in Exhibit 4 attached hereto) (collectively, "**Operating Expenses**") allocated to the Premises have been incorporated into the Base Rent due under this Lease, and (ii) in no event shall Tenant be responsible or liable for any Operating Costs, such costs being the sole responsibility of Landlord.

5.3 Taxes.

(a) Landlord is an agency of the state of Texas. As such, Landlord does not pay real estate taxes or personal property taxes on property used and controlled by Landlord. Such exemption does not apply to the Premises when under the use and control of Tenant. "**Taxes**" shall mean the real estate taxes and other taxes, levies and assessments imposed upon the Campus and upon any personal property of Landlord used in the operation thereof, or on Landlord's interest therein or such personal property; charges, fees and assessments for transit, housing, police, fire or other services or purported benefits to the Campus (including without limitation any community preservation assessments); service or user payments in lieu of taxes; and any and all other taxes, levies, betterments, assessments and charges arising from the ownership, leasing, operation, use or occupancy of the Campus or based upon rentals derived therefrom, which are or shall be imposed by federal, state, county, municipal or other governmental authorities. Taxes shall not include any sales, inheritance, estate, succession, gift, franchise, rental, income or profit tax, capital stock tax, capital levy or excise, any income taxes arising out of or related to the ownership and operation of the Campus, or any interest or penalties resulting from the late payment of Taxes by Landlord (except to the extent due to Tenant's failure to make timely payments); provided, however, that if during the Term the present system of taxation of real or personal property shall be changed, any tax, excise, fee, levy, charge or assessment, however described, that may in the future be levied or assessed as a substitute for, in whole or in part, any tax, levy or assessment which would otherwise constitute Taxes, whether or not now customary or in the contemplation of the parties on the Execution Date of this Lease, shall constitute Taxes, but only to the extent calculated as if the Campus were the only real estate owned by Landlord. "Taxes" shall also include reasonable expenses (including without limitation legal and consultant fees) of tax abatement or other proceedings contesting assessments or levies.

(b) "**Tax Period**" shall be any fiscal/tax period in respect of which Taxes are due and payable to the appropriate governmental taxing authority (i.e., as mandated by the governmental taxing authority), any portion of which period occurs during the Term.

(c) **Payment of Taxes**. Commencing as of the Commencement Date and continuing thereafter throughout the remainder of the Term of the Lease, Tenant shall pay to Landlord, as Additional Rent, Tenant's Share of Taxes. Landlord may make a good faith estimate of the Taxes to be due by Tenant for any Tax Period or part thereof during the Term, and Tenant shall pay to Landlord, on the Commencement Date and on the first (1st) day of each calendar month thereafter, an amount equal to Tenant's Share of Taxes for such Tax Period or part thereof divided by the number of months therein. Landlord may estimate and re-estimate Tenant's Share of Taxes and deliver a copy of the estimate or re-estimate to Tenant, provided that no such re-estimate shall occur more than once with respect to any Tax Period. Thereafter, the monthly installments of Tenant's Share of Taxes shall be appropriately adjusted in accordance with the estimations so that, by the end of the Tax Period in question, Tenant shall have paid all of Tenant's Share of Taxes as estimated by Landlord. Any amounts paid based on such an estimate shall be subject to adjustment as herein provided when actual Taxes are available for each Tax Period, provided however, in the event Landlord fails to deliver an invoice to Tenant reflecting an increase in actual Taxes on or before the later of (i) the date which is ninety (90) days following Landlord's receipt of such tax bill, or (ii) August 31st following the date on which the tax bill is available, Tenant shall have no obligation or liability with respect to such increased amounts. If the total of such monthly remittances is greater than Tenant's Share of Taxes actually due for such Tax Period, then, provided no Event of Default has occurred nor any event which, with the passage of time and/or the giving of notice would constitute a Monetary Event of Default, Tenant may credit the difference against the next installment of Additional Rent on account of Taxes due hereunder, except that if such difference is determined after the end of the Term, Landlord shall refund such difference to Tenant within thirty (30) days after such determination to the extent that such difference exceeds any amounts then due from Tenant to Landlord. Subject to Landlord's obligation to timely deliver an invoice therefor in accordance with the terms of this Section, if the total of such remittances is less than Tenant's Share of Taxes actually due for such Tax Period, Tenant shall pay the difference to Landlord, as Additional Rent hereunder, within thirty (30) days of Tenant's receipt of a reasonably detailed invoice therefor. Landlord's estimate for the next Tax Period shall be based upon actual Taxes for the prior Tax Period plus a reasonable adjustment based upon estimated increases in Taxes. Upon Tenant's request, Landlord shall furnish Tenant with copies of the applicable Tax bills. Payment for any taxes owed on any equipment or personal property owned or leased by Tenant is the sole responsibility of Tenant and said taxes will not be invoiced or collected by Landlord. The provisions of this Section 5.3(c) shall survive the expiration or earlier termination of this Lease.

(d) **Effect of Abatements**. Tenant shall have the right to contest the amount or validity of assessed valuation of the Premises for any Tax Period at Tenant's sole cost and expense, provided however, prior to the commencement of any such contest Tenant shall coordinate any such contest with any other Building tenants that occupy assessed premises within the Building. Tenant shall receive a credit against Taxes (or a refund if the Term has been terminated or expired) in the amount of Tenant's Share of Taxes for any refund obtained by reason of a reduction in any Taxes by the assessors or the administrative, judicial or other governmental agency responsible therefor.

(e) **Part Years**. Tenant shall be responsible for the payment of Tenant's Share of Taxes for and with respect to the period of time commencing on the Commencement Date and ending on the last day of the Tax Period in which the Expiration Date or earlier termination of this Lease occurs.

5.4 Late Payments.

(a) Any payment of Rent due hereunder not paid when due shall bear interest for each month or fraction thereof from the due date until paid in full at the annual rate of eight percent (8%), or at any applicable lesser maximum legally permissible rate for debts of this nature (the "**Default Rate**"). Notwithstanding the foregoing, Tenant shall be entitled to a grace period of five (5) Business Days after written notice from Landlord with respect to the first two (2) late payments in any twelve (12) month period.

(b) Additionally, if Tenant fails to make any payment within five (5) Business Days after the due date therefor, Landlord may charge Tenant a fee, which shall constitute liquidated damages, equal to three (3%) of any such late payment.

(c) For each Tenant payment check to Landlord that is returned by a bank for any reason, Tenant shall pay a returned check charge equal to the amount as shall be customarily charged by Landlord's bank at the time.

(d) Money paid by Tenant to Landlord after an Event of Default shall be applied to Tenant's account in the following order: first, to any unpaid Additional Rent, including without limitation late charges, returned check charges, legal fees and/or court costs chargeable to Tenant hereunder; and then to unpaid Base Rent.

(e) The parties agree that the late charge referenced in Section 5.4(b) represents a fair and reasonable estimate of the costs that Landlord will incur by reason of any late payment by Tenant, and the payment of late charges and interest are distinct and separate in that the payment of interest is to compensate Landlord for the use of Landlord's money by Tenant, while the payment of late charges is to compensate Landlord for Landlord's processing, administrative and other costs incurred by Landlord as a result of Tenant's delinquent payments. Acceptance of a late charge or interest shall not constitute a waiver of Tenant's default with respect to the overdue amount or prevent Landlord from exercising any of the other rights and remedies available to Landlord under this Lease or at law or in equity now or hereafter in effect.

5.5 No Offset; Independent Covenants; Waiver. Rent shall be paid without notice or demand, and without setoff, counterclaim, defense, abatement, suspension, deferment, reduction or deduction, except as expressly provided herein. **TENANT WAIVES ALL RIGHTS (I) TO ANY ABATEMENT, SUSPENSION, DEFERMENT, REDUCTION OR DEDUCTION OF OR FROM RENT, AND (II) TO QUIT, TERMINATE OR SURRENDER THIS LEASE OR THE PREMISES OR ANY PART THEREOF, EXCEPT AS EXPRESSLY PROVIDED HEREIN. TENANT HEREBY ACKNOWLEDGES AND AGREES THAT THE OBLIGATIONS OF TENANT HEREUNDER SHALL BE SEPARATE AND INDEPENDENT COVENANTS AND AGREEMENTS, THAT RENT SHALL CONTINUE TO BE PAYABLE IN ALL EVENTS AND THAT THE OBLIGATIONS OF TENANT HEREUNDER SHALL CONTINUE UNAFFECTED, UNLESS THE REQUIREMENT TO PAY OR PERFORM THE SAME SHALL HAVE BEEN TERMINATED OR REDUCED PURSUANT TO AN EXPRESS PROVISION OF THIS LEASE. LANDLORD AND TENANT EACH ACKNOWLEDGES AND AGREES THAT THE INDEPENDENT NATURE OF THE OBLIGATIONS OF TENANT HEREUNDER REPRESENTS FAIR, REASONABLE, AND ACCEPTED COMMERCIAL PRACTICE WITH RESPECT TO THE TYPE OF PROPERTY SUBJECT TO THIS LEASE, AND THAT THIS AGREEMENT IS THE PRODUCT OF FREE AND INFORMED NEGOTIATION DURING WHICH BOTH LANDLORD AND TENANT WERE REPRESENTED BY COUNSEL SKILLED IN NEGOTIATING AND DRAFTING COMMERCIAL LEASES.**

5.6 Survival. Any obligations under this Article 5 which shall not have been paid at the expiration or earlier termination of the Term shall survive such expiration or earlier termination for a period of two (2) years and shall be paid when and as the amount of same shall be determined and be due.

6. RIGHT OF FIRST OFFER

6.1 ROFO Rights. If at any time between the Execution Date and the date which is twelve (12) months prior to the Expiration Date, any separately demised rentable area within the Building (the "**Building D ROFO Space**"), Building B, or Suite 8040 in Building C on the Campus (each such area, a "**ROFO Space**") has become "available for leasing" (as hereinafter defined), and provided that the conditions precedent set forth in 6.3 below are then satisfied, then prior to offering to lease such ROFO Space to any third parties, Landlord shall deliver notice thereof to Tenant (the "**ROFO Notice**") setting forth a description of the ROFO Space in question (including the rentable area thereof), the Landlord's determination of Base Rent and Additional Rent for such ROFO Space, the other material business terms upon which Landlord is willing to lease the ROFO Space, and the date Landlord anticipates that the ROFO Space will become available for leasing. As soon as is reasonably possible, and in no event more than seven (7) Business Days following delivery of the ROFO Notice, Landlord shall make arrangements for Tenant to tour the applicable ROFO Space. Provided that all of the conditions precedent set forth in this Article 6 are fully satisfied by Tenant, Tenant shall have the option (the "**ROFO Option**"), exercisable by Tenant delivering written notice (the "**Acceptance Notice**") to Landlord within fifteen (15) Business Days after delivery by Landlord of the ROFO Notice, to lease all of the subject ROFO Space upon all of the terms and conditions set forth in the ROFO Notice, including the Base Rent and Additional Rent for the ROFO Space designated by Landlord as set forth therein. Time shall be of the essence as to Tenant's delivery of an Acceptance Notice with respect to any ROFO Space. If Tenant fails to deliver an Acceptance Notice within such fifteen (15) Business Day period, then Tenant shall be deemed to have rejected the option to lease the applicable ROFO Space (the "**Rejected ROFO Space**"). In such event, Tenant shall have no further rights or claims with respect to the Rejected ROFO Space (except as set forth in Section 6.6), Landlord shall have no further liabilities or obligations to Tenant with respect to the Rejected ROFO Space, and Landlord may elect to lease the Rejected ROFO Space to third parties upon such terms and conditions as Landlord may determine in its discretion.

6.2 Available for Leasing, etc. For purposes of this Article 6, space shall be deemed "available for leasing" when (a) the space is vacant, or (b) the respective existing tenant or occupant does not intend to extend or renew the term of its lease or other occupancy agreement for the ROFO Space or to enter into a new lease for such ROFO Space. For purposes of this Article 6, space shall not be deemed "available for leasing" if, at the time in question (x) any person or entity leases or occupies the ROFO Space, whether pursuant to a lease or other agreement (unless such person or entity confirms to the satisfaction of Landlord that it does not intend to extend or renew the term of the lease or other occupancy agreement for the ROFO space or enter into a new lease for such ROFO Space), (y) any person or entity holds any option or right to extend or renew its lease or right(s) of occupancy with respect to such ROFO Space, or (z) Landlord intends to occupy the ROFO Space, or to lease or otherwise permit the occupancy of the ROFO Space by an affiliate or subsidiary of Landlord. In addition, the Building D ROFO Space shall not be "available for leasing" in the event Landlord intends to lease or otherwise permit the occupancy of the Building D ROFO Space by a tenant or other occupant with which Landlord has entered into a contractual research or clinical relationship. Without limitation, so long as a tenant or other occupant leases or occupies all or a portion of the ROFO Space, Landlord shall be free to extend or renew any such tenancy or occupancy, whether or not pursuant to a lease or other agreement, and such space shall not be deemed to be "available for leasing." Nothing set forth in this Section 6.2 shall be construed to limit Landlord's right to keep space in the Building vacant if Landlord elects, in its sole discretion, to do so, and such vacant space shall in no event be deemed to be "available for leasing" hereunder. Landlord represents and warrants to Tenant that the ROFO Space is not subject to any existing rights of first offer or other expansion rights or options of other tenants.

6.3 No Event of Default. Tenant shall have no right to exercise any ROFO Option or to lease any ROFO Space, and Landlord shall have no obligation to deliver a ROFO Notice, if an Event of Default exists on the date the respective space becomes available for leasing or on the date of the Acceptance Notice.

6.4 Terms. Effective as of the date on which Landlord delivers the ROFO Space to Tenant (the "**ROFO Space Commencement Date**"):

(i) The ROFO Space shall be added to and be deemed to be a part of the Premises for all purposes under this Lease and on all of the terms and conditions of this Lease (except as otherwise provided in this Article 6), including, without limitation, Tenant's Cancellation right set forth in Section 3.3 of this Lease (except that Tenant must deliver a Cancellation Notice by not later than thirty (30) days following the ROFO Space Commencement Date);

(ii) The ROFO Space shall be delivered in the Delivery Condition; Landlord shall not be obligated to perform any work or improvements or to provide any allowances or inducements with respect thereto;

(iii) Base Rent and Additional Rent for the ROFO Space shall be as set forth in the ROFO Notice;

(iv) Tenant shall pay all Additional Rent payable under this Lease with respect to the applicable ROFO Space, except to the extent that any such Additional Rent is included in the amounts payable under clause (iii) above; and

(v) If the Acceptance Notice for the applicable ROFO Space is delivered prior to the date which is two (2) years before the Expiration Date, then the term of the leasing of the ROFO Space shall be the Expiration Date; and, if the Acceptance Notice for the applicable ROFO Space is delivered on or after the date which is two (2) years before the Expiration Date, then the term of the leasing of the ROFO Space shall be as set forth in the ROFO Notice.

6.5 Amendment. The delivery of the Acceptance Notice by Tenant shall constitute the irrevocable and unconditional acceptance by Tenant of the offer to lease the ROFO Space upon all of the terms and conditions set forth in the ROFO Notice. Without limitation, if Tenant timely delivers an Acceptance Notice and exercises the ROFO Option, upon request made by either party, Landlord and Tenant will execute, acknowledge and deliver an amendment to this Lease (or, upon mutual agreement of Landlord and Tenant, a new lease on the same form as this Lease) confirming the ROFO Space Commencement Date, Base Rent and Additional Rent payable with respect to the ROFO Space, the incorporation of the ROFO Space into the Premises, and the modifications to this Lease resulting therefrom, as set forth in Section 6.4; provided, however, as long as the conditions set forth in Section 6.3 are satisfied, the timely delivery of an Acceptance Notice after receipt of the ROFO Notice shall be the automatic and self-operative exercise of the ROFO Option and the failure of either party to execute and deliver such an amendment shall not detract from the exercise by Tenant of the ROFO Option. Notwithstanding the foregoing, Tenant acknowledges and agrees that its exercise of any ROFO Option hereunder is subject to approval by the Board, if and to the extent such approval is required in accordance with the standard rules, regulations and procedures of the Board of general applicability to lease transactions, consistently applied.

6.6 Reoffer of ROFO Space to Tenant. The ROFO Option of Tenant hereunder with respect to each respective ROFO Space shall terminate and expire on the earlier to occur of (a) as provided in Section 6.1 above, Tenant's failure to deliver an Acceptance Notice within the fifteen (15) Business Day period of time set forth above, or (b) as provided in Section 6.3 above, the date Landlord would have provided Tenant a ROFO Notice if there had not been an Event of Default, as set forth in Section 6.3 above. Notwithstanding the foregoing, if (i) Tenant was entitled to exercise its ROFO Option but failed to deliver an Acceptance Notice within the (15) Business Day period, and (ii) thereafter prior to entering into a lease (or leases) for such ROFO Space either (x) Landlord proposes to lease the respective ROFO Space to a prospective tenant on terms that are "materially more favorable" than those set forth in the ROFO Notice previously delivered to Tenant, or (y) Landlord does not enter into a lease for the respective ROFO Space within a period of twelve (12) months following the date of the ROFO Notice, then Tenant's rights shall be revived and Tenant shall once again have a ROFO Option with respect to the respective ROFO Space. For purposes hereof, the terms offered to a prospective tenant shall be deemed to be "materially more favorable" from those set forth in the ROFO Notice if there is a reduction of more than five percent (5%) in the "bottom line" cost per rentable square foot of the ROFO Space to the prospective tenant, when compared with the "bottom line" cost per rentable square foot for the ROFO Space under the ROFO Notice, determined by considering all of the economic terms of both proposals, respectively, including, among other relevant factors, the base rent, the tax and expense escalation, the additional rent, any free rent periods, and any other concessions and allowances.

6.7 Expiration. Notwithstanding any provision contained herein to the contrary, from and after the earliest to occur of (i) the expiration or earlier termination of the 2019 R&D Agreement, (ii) the date on which (A) Tenant has exercised ROFO Options with respect to 22,000 rentable square feet or more of the ROFO Space in the aggregate, and (B) this Lease has been amended in writing to include all such ROFO Space, or (iii) the date which is twelve (12) months prior to the Expiration Date, then this Article 6 shall become null and void and of no further force or effect and Tenant shall have no further ROFO Options or other rights to lease any ROFO Space pursuant to this Article 6. In such event, all of the obligations of Landlord to offer any ROFO Space to Tenant shall be considered to have been fully and completely satisfied, and neither Landlord nor Tenant shall have any further rights, liabilities or obligations under this Article 6.

7. TERMINATION OPTION.

7.1 Termination Option. Subject to the full and complete satisfaction of the Termination Conditions Precedent (as hereinafter defined), in accordance with the provisions of this Article 7, Tenant shall have the option to terminate this Lease (a "**Termination**"). The conditions precedent (the "**Termination Conditions Precedent**") to the effectiveness of any such Termination shall be as follows: (i) Tenant shall deliver written notice (a "**Termination Notice**") of such Termination to Landlord by not earlier than January 1, 2022; and (ii) the effective date of any such Termination shall be the date (the "**Termination Date**") designated by Tenant in the Termination Notice; provided however, the Termination Date shall be not less than three (3) months following the date on which Tenant delivers the Termination Notice to Landlord.

7.2 Termination. Provided that all of the Termination Conditions Precedent have been fully and completely satisfied, then effective as of the Termination Date, this Lease, and the rights of the Tenant with respect to the Premises, shall terminate and expire with the same force and effect as if such Termination Date had originally been specified as the Expiration Date. Prior to the later of (such later date, the "**Yield-Up Date**") (i) the Termination Date, and (ii) the date on which Tenant actually surrenders and yields-up the Premises, Tenant shall comply with all of the terms and provisions of the Lease and shall perform all of its obligations hereunder, including, without limitation, the obligation to pay when due all Base Rent and Additional Rent. By not later than the Termination Date, Tenant shall surrender and yield-up the Premises in broom-clean condition, free of all tenants and occupants, and otherwise in the condition in which the Premises are required to be surrendered pursuant to this Lease at the expiration of the Term.

7.3 Release of Liabilities. Effective as of the Termination Date, Landlord shall be released from any and all obligations and liabilities thereafter accruing under this Lease. Nothing contained herein shall constitute a waiver, limitation, amendment, or modification of any of the liabilities and obligations of Landlord under this Lease which accrue or arise prior to the Termination Date. Effective as of the Yield-Up Date, Tenant shall be released from any and all liabilities and obligations thereafter accruing under this Lease. Nothing contained herein shall constitute a waiver, limitation, amendment, or modification of any of the liabilities and obligations of Tenant under this Lease which accrue or arise prior to the Yield-Up Date.

7.4 Holdover. Without limiting the foregoing, if Tenant fails to yield up and surrender the Premises by the Termination Date, then for and with respect each day between the Termination Date and the Yield-Up Date, Tenant shall pay a holdover charge at the rate set forth in Section 21.3 of this Lease. Nothing herein contained shall constitute a release, waiver, limitation, or restriction of any rights or remedies of Landlord on account of Tenant's failure to surrender the Premises by the Termination Date, including any rights or remedies afforded to Landlord in Article 21 of this Lease.

7.5 Amendment. The foregoing provisions shall be self-operative; provided, however, on the request of either party Landlord and Tenant will enter into a mutually satisfactory amendment to this Lease evidencing such Termination of this Lease.

7.6 Time of Essence. Time is of the essence of this Article 7.

8. INTENTIONALLY OMITTED.

9. UTILITIES, LANDLORD'S SERVICES

9.1 Electricity. Tenant shall contract with the utility provider for electric service to the Premises. Commencing on the Commencement Date, Tenant shall pay all charges for electricity furnished to the Premises, and any equipment exclusively serving the Premises, directly to the utility company, based on the submeter(s) currently installed in the Premises. Tenant shall, at Tenant's sole cost and expense, install (to the extent not already installed), maintain and keep in good order, condition and repair the metering equipment used to measure electricity furnished to the Premises and any equipment exclusively serving the same.

9.2 Water. Landlord shall contract with the applicable utility provider for water and sewer service to the Premises, and shall pay all charges for water and sewer service furnished to the Premises, all at Landlord's sole cost and expense.

9.3 Gas. Tenant shall contract with the applicable utility provider for gas service to the Premises, and shall pay all charges for gas service furnished by the utility provider to the Premises, all at Tenant's sole cost and expense. Notwithstanding anything in this Lease to the contrary, Tenant acknowledges that there is currently no gas line providing service to the Building. Promptly following Tenant's election, Landlord shall work with Tenant to request that the utility provider install a gas service line to the Building at the sole cost of Tenant, payable upon demand in advance, and shall pursue gas service with such utility provider at Tenant's sole cost and expense. All reasonable third-party costs (i) of the installation of the gas line, (ii) to repair the Campus and Building to its condition prior to such installation, and (iii) of any infrastructure required as a result of the installation of such gas line, shall be paid by Tenant.

9.4 Other Utilities. Subject to Landlord's reasonable rules and regulations governing the same, Tenant shall obtain and pay, as and when due, for all other utilities and services consumed in and/or furnished to the Premises, together with all taxes, penalties, surcharges and maintenance charges pertaining thereto.

9.5 Interruption or Curtailment of Utilities.

(a) When necessary by reason of accident or emergency, or for repairs, alterations, replacements or improvements which in the reasonable judgment of Landlord are desirable or necessary to be made and are made in accordance with the other terms and conditions of this Lease, Landlord reserves the right, upon as much prior notice to Tenant as is practicable under the circumstances and no less than five (5) Business Days' notice except in the event of an emergency, to temporarily interrupt, curtail, or stop (i) the furnishing of hot and/or cold water, and (ii) the operation of the plumbing and electric systems. With respect to any planned interruption, Landlord shall consult with Tenant to schedule such interruption in an effort to minimize interference with Tenant's business operations. With respect to any planned interruption of more than ten (10) minutes, Landlord shall perform the same after Normal Business Hours to the extent reasonably practicable in good faith except in the event of an emergency. Landlord shall exercise reasonable diligence to eliminate the cause of any such interruption, curtailment, stoppage or suspension, but, subject to Section 9.5(b) below, there shall be no diminution or abatement of Rent or other compensation due from Landlord to Tenant hereunder, nor shall this Lease be affected or any of Tenant's obligations hereunder reduced, and Landlord shall have no responsibility or liability for any such interruption, curtailment, stoppage, or suspension of services or systems.

(b) Notwithstanding anything to the contrary in this Lease contained, if the Premises are rendered untenantable, in whole or part, due to the failure of Landlord to provide any service required to be provided by Landlord under this Lease (including, without limitation, access or egress, and repair and maintenance of the foundation and Building structure in accordance with Section 10.2), or if Tenant's use and occupancy of the Premises or any part thereof shall be disturbed in violation of Article 23 hereof (thereby rendering the Premises or a portion thereof substantially untenantable) (either of the foregoing, a "**Material Services Failure**") such that, for the duration of the Landlord Service Interruption Cure Period (hereinafter defined), the continued operation in the ordinary course of Tenant's business in any portion of the Premises is materially and adversely affected, and if Tenant ceases to use the affected portion of the Premises in the ordinary course (the "**Affected Portion**") during the period of untenantability as the direct result of such Material Services Failure, then, provided that Landlord's inability to cure such condition is not caused by the negligence or willful misconduct of any of the Tenant Parties, Base Rent and Tenant's obligation to pay Additional Rent on account of Taxes shall be equitably abated from and after the event giving rise to such interruption until the day such condition is completely corrected. For purposes hereof, the "**Landlord Service Interruption Cure Period**" shall be defined as three (3) consecutive Business Days after written notice from Tenant identifying the condition causing untenantability in the Affected Portion (the "**Interruption Notice**"). In the event that a Material Services Failure materially and adversely interferes with Tenant's use of at least 25% of the Premises (as measured in rentable square feet) for a period of thirty (30) consecutive days after the Interruption Notice, then provided that Landlord's inability to cure such condition is not caused by the negligence or willful misconduct of any of the Tenant Parties, Tenant may elect to terminate this Lease by giving ten (10) days' prior written notice to Landlord, provided that this Lease shall remain in full force and effect, and such termination notice shall be null and void, if the Material Services Failure is remedied within such 10-day period. The provisions of this Section 9.5(b) shall not apply in the event of Casualty or Taking (which shall be governed by Article 15 below).

9.6 Landlord's Services. Landlord shall provide the services described in Exhibit 4 attached hereto and made a part hereof in a professional manner ("**Landlord's Services**").

9.7 Telecommunications Providers. Landlord shall not unreasonably withhold, condition or delay its approval of access by any particular telecommunications service provider to the Building or to Premises. If Landlord permits such access, Landlord may condition such access upon (a) the execution of a commercially reasonable telecommunications agreement (which shall require the payment of fair market rent for any space in the Property dedicated, licensed and/or leased to such provider except that no such rent shall be payable for space in common utility closets or shafts/risers), and (b) after the Term Commencement Date, the payment to Landlord by Tenant or the service provider of any reasonable third party costs incurred by Landlord in facilitating such access.

10. MAINTENANCE AND REPAIRS

10.1 Maintenance and Repairs by Tenant. Tenant shall maintain, repair and keep free of insects, rodents, vermin and other pests and in compliance with all applicable Legal Requirements: the Premises (except as set forth in Section 10.2 below), including without limitation the entire interior of the Premises (except as set forth in Section 10.2 below), all electronic, phone and data cabling and related equipment (other than building service equipment) that is installed by or for the exclusive benefit of the Tenant (whether located in the Premises or other portions of the Building), all fixtures, equipment and specialty lighting therein, any supplemental HVAC and humidification equipment exclusively serving the Premises, electrical equipment wiring, doors, non-structural walls, windows and floor coverings, and all Building systems and equipment that are located in or exclusively serve the Premises, including, without limitation, equipment critical to laboratory operations, and HVAC and fire and life safety systems located in the Premises.

10.2 Maintenance and Repairs by Landlord. Except as otherwise provided in Section 15, and subject to Tenant's obligations in Section 10.1 above, Landlord shall keep, maintain, repair and operate and, as necessary, replace, (a) in acceptable working order and condition, consistent with the representations made in Section 3.1, and in compliance with all applicable Legal Requirements, and in a manner necessary to provide the services required of Landlord hereunder: the Building foundation, and (b) in good working order and condition, and in compliance with all applicable Legal Requirements, and in a manner necessary to provide the services required of Landlord hereunder: the roof, Building structure, and the common mechanical systems and utilities serving the Building and Premises (including, without limitation electrical, plumbing, life safety and other systems) to the point where they are stubbed to the Premises, the exterior windows and walls, the structural floor slabs and columns, and the Parking Lot and Common Areas.

10.3 Intentionally Omitted.

10.4 Floor Load—Heavy Equipment. Tenant shall not place a load upon any floor of the Premises exceeding the floor load per square foot of area which such floor was designed to carry and which is allowed by Legal Requirements. Landlord reserves the right to reasonably approve the position of all safes, heavy machinery, heavy equipment, freight, bulky matter or fixtures (collectively, "**Heavy Equipment**"), which shall be placed so as to distribute the weight. Heavy Equipment shall be placed and maintained by Tenant at Tenant's expense in settings sufficient in Landlord's reasonable judgment to absorb and prevent vibration, noise and annoyance, Landlord hereby agreeing that the Fit Plan of Tenant's Initial Work, and, if applicable, Landlord's approval (or deemed approval) of the Final Construction Drawings, shall be deemed Landlord's approval with respect to the position and settings of Heavy Equipment installed as part of Tenant's Work. Subject to the provisions of Section 14.6, any moving of Heavy Equipment shall be at the sole risk and hazard of Tenant and Tenant will defend, indemnify and save Landlord and Landlord's agents (including without limitation its property manager), contractors and employees (collectively with Landlord, the "**Landlord Parties**") harmless from and against any and all third party claims, damages, losses, penalties, costs, expenses and fees (including without limitation reasonable legal fees) for personal injury or property damage (collectively, "**Claims**") resulting directly or indirectly from such moving, except to the extent resulting from the negligence or willful misconduct of Landlord or the Landlord Parties.

10.5 Premises Cleaning. Tenant shall be responsible, at its sole cost and expense, for janitorial and removing trash from the Premises to Tenant's dumpster, and for providing biohazard disposal services for the Premises, including the laboratory areas thereof. Such services shall be performed by licensed (where required by law or governmental regulation), insured and qualified contractors and on a sufficient basis to ensure that the Premises are at all times kept neat and clean. Tenant shall maintain a dumpster and/or compactor on the Campus within a reasonable proximity to the Building for Tenant's disposal of non-hazardous and non-controlled substances, the location of which shall be approved by Landlord, such approval not to be unreasonably withheld, conditioned or delayed.

10.6 Pest Control. Tenant, at Tenant's sole cost and expense, shall cause the Premises to be exterminated on a monthly basis and shall cause all portions of the Premises used for the storage, preparation, service or consumption of food or beverages to be cleaned daily, and to be treated against infestation by insects, rodents and other vermin and pests whenever there is evidence of any infestation.

11. ALTERATIONS AND IMPROVEMENTS BY TENANT

11.1 Landlord's Consent Required.

(a) Tenant shall not make any alterations, decorations, installations, removals, additions or improvements (collectively with Tenant's Work, "**Alterations**") in or to the Premises without Landlord's prior consent, such consent not to be unreasonably withheld, conditioned or delayed; provided however, Landlord's prior consent shall not be required with respect to any Alterations which (1) do not materially and adversely affect the Common Areas, (2) do not materially and adversely affect the proper functioning of any Building system, (3) do not materially and adversely impact the structure of the Buildings, and (4) comply with applicable Legal Requirements. Tenant shall be responsible for all elements of the design of Tenant's plans (including, without limitation, compliance with Legal Requirements, functionality of design, the structural integrity of the design, the configuration of the Premises and the placement of Tenant's furniture, appliances and equipment), and Landlord's approval, if any, of Tenant's plans shall in no event relieve Tenant of the responsibility for such design. Landlord's approval shall not be understood as being Landlord's assessment of the adequacy of the design of Tenant's plans for any purpose (including, without limitation, compliance with Legal Requirements, functionality of design, the structural integrity of the design, the configuration of the Premises and the placement of Tenant's furniture, appliances and equipment). Landlord shall have no liability or responsibility for any claim, injury or damage alleged to have been caused by the particular materials (whether building standard or non-building standard), appliances or equipment selected by Tenant in connection with any work performed by or on behalf of Tenant. Landlord may elect, not later than the time of Landlord's approval thereof (or as soon as reasonably possible and in any event within thirty (30) days after receipt of reasonably detailed notice regarding any Alterations, provided that Landlord shall notify Tenant within seven (7) Business Days if Landlord is considering requiring Tenant to remove such Alterations), to require Tenant at the expiration or sooner termination of the Term to remove any Alterations for which Landlord's approval is required hereunder and which are reasonably determined by Landlord to be inconsistent with customary laboratory, office, research and development and manufacturing use standards in Houston and to restore the Premises to substantially the same condition as existed immediately prior to such Alterations. Tenant shall provide Landlord with reproducible record drawings (in CAD format) of all material completed Alterations within sixty (60) days of Landlord's request.

(b) In the event Landlord's approval is required pursuant to Section 11.1(a) above, or Tenant otherwise elects to request Landlord's approval, Landlord shall not unreasonably withhold or condition its approval of plans and specifications submitted by Tenant and shall respond to the request of Tenant for such approval within ten (10) Business Days after receipt thereof. If Landlord disapproves said plans and specifications, then concurrent therewith Landlord will specify in writing the reason(s) for such disapproval with sufficient specificity so as to allow Tenant to make such changes as Landlord may reasonably require. If Landlord does not respond to a request for approval of such Plans within said ten (10) Business Day period of time, then Tenant may elect to submit an Alteration Reminder Notice (as hereinafter defined) to Landlord and if Landlord does not respond to the Alteration Reminder Notice within five (5) Business Days after receipt thereof, then the proposed Alterations shown on said plans and specifications shall be considered to have been approved by Landlord. An "**Alteration Reminder Notice**" shall mean a written notice delivered by Tenant to Landlord stating the following in capitalized and bold type prominently on the top of the first page of such notice: **"THIS NOTICE IS AN ALTERATION REMINDER NOTICE DELIVERED UNDER THE LEASE. IF LANDLORD DOES NOT RESPOND TO THE PROPOSED PLANS WITHIN FIVE (5) BUSINESS DAYS AFTER RECEIPT OF THIS NOTICE, THEN LANDLORD WILL BE CONSIDERED TO HAVE APPROVED OF THE PROPOSED ALTERATIONS SHOWN ON THE PREVIOUSLY DELIVERED PLANS AND SPECIFICATIONS."**

11.2 Liens. Any mechanic's lien filed against the Premises or the Building for work claimed to have been done for, or materials claimed to have been furnished to, Tenant shall be bonded over or discharged by Tenant within ten (10) Business Days after Tenant receives notice thereof, at Tenant's expense.

11.3 General Requirements. Unless Landlord and Tenant otherwise agree in writing, Tenant shall (a) procure or cause others to procure on its behalf all necessary permits before undertaking any Alterations in the Premises (and provide copies thereof to Landlord), provided that Landlord shall reasonably cooperate with Tenant in order for Tenant to obtain such permits; and (b) perform all of such Alterations in a good and workmanlike manner, employing materials of good quality and in compliance with the Rules and Regulations, all insurance requirements of this Lease, and Legal Requirements.

11.4 Remaining Funds. Following Tenant's completion of Tenant's Work, Tenant may submit applications with respect to any future Alterations, and Landlord shall pay and/or credit such applications out of any Remaining Funds in the same manner as Tenant's Work Costs, as set forth in Section I(4) of Exhibit 3.

12. SIGNAGE

12.1 Restrictions. Tenant shall have the right to install Building standard signage identifying Tenant's business at the entrance and lobby to the Premises, which signage shall be subject to Landlord's prior written consent, not be unreasonably withheld, conditioned or delayed.

12.2 Exterior Signage.

(a) Intentionally Omitted.

(b) Façade Signage.

(i) Tenant shall have the right to install, at Tenant's cost and expense, Tenant's signage on the exterior façade of the Building ("**Tenant's Façade Signage**"), in each case during the initial Term of the Lease, and any extensions thereof, subject to the provisions of this Section 12.2.

(ii) Façade Signage Conditions and Obligations. Tenant's right to maintain Tenant's Façade Signage is subject to the following conditions and obligations: (i) Tenant's Façade Signage shall be subject to the prior written approval of Landlord as to location, size, materials, manner of attachment and appearance of Tenant's Façade Signage, and the materials, design, lighting and method of installation of Tenant's Façade Signage, which approval shall not be unreasonably withheld, conditioned or delayed, (ii) Tenant's Façade Signage shall comply with all Legal Requirements (and Tenant shall have obtained any necessary permits prior to installing Tenant's Façade Signage), (iii) Tenant shall have obtained all governmental permits and approvals required in connection therewith, (iv) the maintenance and removal of such Tenant's Façade Signage (including, without limitation, the repair and cleaning of the exterior of the Building upon removal of Tenant's Façade Signage) shall be performed at Tenant's sole cost and expense, subject to and in accordance with the terms and conditions governing Alterations pursuant to Article 11 hereof, (v) Tenant's Façade Signage shall be subject to Landlord's reasonable regulations, and (vi) Tenant shall have the right, from time to time throughout the Term of this Lease, to replace the Tenant's Façade Signage (if any) with signage which is equivalent to the signage being replaced, subject to all of the terms and conditions of this Section 12.2.

13. ASSIGNMENT, MORTGAGING AND SUBLETTING

13.1 Landlord's Consent Required. Except as expressly otherwise set forth herein (including, without limitation, as set forth in Section 13.4 below), Tenant shall not, without Landlord's prior written consent, such consent to be withheld in Landlord's sole discretion, assign or sublet this Lease or the Premises in whole or in part (each of the foregoing, a "**Transfer**"). Landlord shall promptly either grant or deny consent to any Transfer proposed by Tenant hereunder, in no event more than fifteen (15) days following receipt of Tenant's request thereof. Any purported Transfer made without Landlord's consent, if required hereunder, shall be void and confer no rights upon any third person, provided that if there is a Transfer, Landlord may collect rent from the transferee without waiving the prohibition against Transfers, accepting the transferee, or releasing Tenant from full performance under this Lease. No Transfer shall relieve Tenant of its primary obligation as party Tenant hereunder, nor shall it reduce or increase Landlord's obligations under this Lease.

13.2 Profits In Connection with Transfers. Except with respect to Transfers permitted in accordance with the terms of Section 13.4 below, Tenant shall, within thirty (30) days of receipt thereof, pay to Landlord fifty percent (50%) of any rent, sum or other consideration to be paid or given in connection with any Transfer, either initially or over time, after deducting reasonable actual out-of-pocket legal, brokerage and other transaction expenses incurred or to be incurred by Tenant in connection therewith (including, without limitation, tenant improvements and rent concessions), in excess of Rent hereunder as if such amount were originally called for by the terms of this Lease as Additional Rent.

13.3 Prohibited Transfers. Notwithstanding any contrary provision of this Lease, Tenant shall have no right to make a Transfer unless on both (i) the date on which Tenant notifies Landlord of its intention to enter into a Transfer and (ii) the date on which such Transfer is to take effect, there is no Event of Default under this Lease.

13.4 Exceptions to Requirement for Consent; Exceptions to Landlord's Sole Discretion.

(a) Notwithstanding anything to the contrary herein contained, each of the following shall not require Landlord's consent: (i) mergers or consolidations of Tenant with another entity, provided that the resulting entity following such merger or consolidation is the initial Tenant under this Lease (or such successor or assign permitted in accordance with the terms and conditions of this Article 13), (ii) the issuance, transfer or acquisition of ownership interests in Tenant, including, without limitation, the sale, issuance or acquisition of stock in Tenant, or (iii) the sublease of all or any portion of the Premises to any corporation or business entity which is related (i.e., an entity for which Tenant has at least a 10% ownership interest), controls, is controlled by, or is under common control with Tenant (or such successor or assign permitted in accordance with the terms and conditions of this Article 13).

(b) Notwithstanding anything to the contrary herein contained, Landlord shall not unreasonably withhold, condition or delay its consent to any of the following Transfers: (i) mergers or consolidations of Tenant with another entity where the resulting entity following such merger or consolidation is not the initial Tenant under this Lease (or such successor or assign permitted in accordance with the terms and conditions of this Article 13), and (ii) the transfer of all or substantially all of Tenant's assets to another business entity (except as set forth in Section 13.4(a)(ii) above), provided such transfer was made for a legitimate independent business purpose and not for the sole purpose of transferring this Lease.

13.5 Denial of Consent; Recapture of Premises. In the event Landlord denies consent to any Transfer proposed by Tenant (excepting only if such denial is in accordance with the terms of Section 13.3 above), then upon notice to Landlord not more than thirty (30) days following the date on which Tenant receives Landlord's notice denying consent to such sublease or assignment, Tenant may elect to terminate this Lease with respect to the portion of the Premises Tenant proposed to sublease, or with respect to the entire Lease in the event Tenant proposed to assign this Lease, such termination to be effective as of the date set forth in such notice to Landlord (but not later than nine (9) months following the effective date of such Transfer). In the event of Landlord's denial of an assignment of this Lease and Tenant's timely termination in accordance with the foregoing, Tenant (or such assignee) shall be permitted to occupy the Premises, subject to and in accordance with the terms and conditions of this Lease, during the period prior to the effective date of the termination of this Lease (not to exceed such nine (9) month period set forth above). Following any such recapture of the Premises, and promptly following the request of Landlord or Tenant, the parties shall enter into an amendment of this Lease memorializing such termination; provided, however, the timely delivery of such termination notice shall be the automatic and self-operative exercise of such recapture, and the failure of either party to execute and deliver such an amendment shall not detract from the exercise by Tenant of such termination.

14. INSURANCE; INDEMNIFICATION; EXCULPATION

14.1 Liability. Except to the extent arising from the negligence or willful misconduct of Landlord or any Landlord Parties, or any breach of this Lease by Landlord, and subject to Section 14.6 below, Tenant shall be fully responsible and liable for any and all demands, claims, suits, damages, losses, liabilities, costs and expenses of any nature whatsoever (including, but not limited to, property damage and loss, bodily injuries, sickness, disease or death) sustained or occurring in the Premises. The provisions of this paragraph shall survive the expiration or termination of this Agreement.

14.2 Tenant's Insurance.

(a) Tenant shall procure, pay for and keep in force throughout the Term (and for so long thereafter as Tenant remains in occupancy of the Premises) Commercial General Liability, Statutory Workers' Compensation, and Employer's Liability insurance. The Workers' Compensation and Employer's Liability policies must have limits of not less than $1,000,000 each accident, each employee, and policy limit. The Workers' Compensation policy shall provide a waiver of subrogation in favor of Landlord Parties. The commercial general liability insurance will insure Tenant on an occurrence basis against all claims and demands for personal injury liability (including, without limitation, bodily injury, sickness, disease, and death) or damage to property which may be claimed to have occurred from and after the time any of the Tenant Parties shall first enter the Premises, with limits of not less than One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) in the aggregate annually. The commercial general liability policy shall include a limit of not less than $300,000 for Damage to Premises Rented to You. Tenant shall also carry umbrella liability coverage with limits of not less than Five Million Dollars ($5,000,000). Such policy shall also include contractual liability coverage covering Tenant's liability assumed under this Lease. Such insurance policy(ies) shall be endorsed and name the Board of Regents of The University of Texas System (the "**Board**"), The University of Texas System, The University of Texas M. D. Anderson Cancer Center ("**MD Anderson**"), and officers and employees of The University of Texas System and MD Anderson as additional insureds.

(b) Tenant shall take out and maintain throughout the Term a policy of fire, vandalism, malicious mischief, extended coverage and so-called "Causes of Loss - Special" coverage insurance in an amount equal to one hundred percent (100%) of the replacement cost insuring (i) all items or components of Alterations (collectively, the "**Tenant-Insured Improvements**"), and (ii) all of Tenant's furniture, equipment, fixtures and property of every kind, nature and description related or arising out of Tenant's leasehold estate hereunder, which may be in or upon the Premises or the Building, excluding retaining walls, paved or concrete surfaces, and foundations or supports below the surface of the lowest floor or basement but including without limitation Tenant's Rooftop Equipment (collectively, "**Tenant's Property**"). The insurance required to be maintained by Tenant pursuant to this Section 14.2(b) is referred to herein as "**Tenant Property Insurance**".

(c) During periods when Tenant's Work and/or any Alterations are being performed, Tenant shall maintain, or cause to be maintained, so-called all risk or cause of loss special property insurance or its equivalent and/or builders risk insurance on 100% replacement cost coverage basis, including hard and soft costs coverages. Such insurance shall protect and insure Landlord, Tenant and Tenant's contractors, as their interests may appear, against loss or damage by fire, water damage, vandalism and malicious mischief, and such other risks as are customarily covered by so-called all risk or special cause of loss property / builders risk coverage or its equivalent.

(d) Tenant shall procure and maintain at its sole expense such additional insurance as may be necessary to comply with any Legal Requirements.

(e) Tenant shall cause all contractors and subcontractors to maintain during the performance of any Alterations the insurance described in Exhibit 6 attached hereto.

(f) The insurance required pursuant to Sections 14.1(a), (b), (c), (d) and (e) (collectively, "**Tenant's Insurance Policies**") shall be effected with insurers approved by Landlord, with a rating of not less than "A-XI" in the current *Best's Insurance Reports*, and authorized to do business in the State of Texas under valid and enforceable policies. Tenant's Insurance Policies may include deductibles in an amount no greater than the greater of $50,000 or commercially reasonable amounts, which will be paid by Tenant. On or before the date on which any of the Tenant Parties shall first enter the Premises and thereafter not less than fifteen (15) days prior to the expiration date of each expiring policy, Tenant shall deliver to Landlord at the contact below certificates evidencing Tenant's Insurance Policies issued by the respective insurers setting forth in full the provisions thereof together with evidence satisfactory to Landlord of the payment of all premiums for such policies. Upon request of Landlord, Tenant shall deliver to any Mortgagee copies of the foregoing documents.

Certificates of Insurance and Additional Insured Endorsements will be mailed, faxed, or emailed to the following Landlord contact:

Name:	The University of Texas M. D. Anderson Cancer Center – Real Estate
Address:	P.O. Box 301439, FHB – Unit 717,
	Houston, Texas 77230-1439
Facsimile Number:	(713) 792-1093
Email Address:	aeross@mdanderson.org

(g) Tenant's insurance will be primary to any insurance carried or self-insurance program established by MD Anderson, Board, or The University of Texas System.

14.3 Indemnification.

(a) Except to the extent caused by the negligence or willful misconduct of any of the Landlord Parties, Tenant shall, subject to Section 14.6 below, defend, indemnify and save the Landlord Parties harmless from and against any and all Claims asserted by or on behalf of any person, firm, corporation or public authority arising from:

(i) Tenant's breach of any covenant or obligation under this Lease;

(ii) Any injury to or death of any person, or loss of or damage to property, sustained or occurring in the Premises; or

(iii) Any injury to or death of any person, or loss of or damage to property arising out of the use or occupancy of the Premises and resulting from the negligence or willful misconduct of any of the Tenant Parties.

(b) Except to the extent caused by the negligence or willful misconduct of any of the Tenant Parties, subject to Section 14.6 below, and to the maximum extent authorized by the laws of the State of Texas (including, without limitation, the Constitution of the State of Texas), Landlord shall defend, indemnify and save the Tenant Parties harmless from and against any and all Claims asserted by or on behalf of any person, entity or public authority arising from (i) Landlord's breach of any covenant or obligation under this Lease, or (ii) any injury to or death of any person, or loss of or damage to any property in or about the Property or Campus to the extent caused by the negligence or willful misconduct of any of the Landlord Parties.

14.4 Property of Tenant. Tenant covenants and agrees that, to the maximum extent permitted by Legal Requirements, all of Tenant's Property at the Premises shall be at the sole risk and hazard of Tenant, and that if the whole or any part thereof shall be damaged, destroyed, stolen or removed from any cause or reason whatsoever, no part of said damage or loss shall be charged to, or borne by, Landlord, except, subject to Section 14.6 hereof, to the extent such damage or loss is due to the negligence or willful misconduct of any of the Landlord Parties.

14.5 Limitation of Landlord's Liability for Damage or Injury. Landlord shall not be liable for any injury or damage to persons, animals or property resulting from fire, explosion, falling plaster, steam, gas, air contaminants or emissions, electricity, electrical or electronic emanations or disturbance, water, rain or snow or leaks from any part of the Building or from the pipes, appliances, equipment or plumbing works or from the roof, street or sub-surface or from any other place or caused by dampness, vandalism, malicious mischief or by any other cause of whatever nature, except, subject to Section 14.6, to the extent caused by or due to the negligence or willful misconduct of any of the Landlord Parties. Nothing in this Section 14.5 shall derogate or diminish Landlord's obligations under Section 10.2 above.

14.6 Waiver of Subrogation. Landlord (to the extent authorized by the Constitution and laws of the State of Texas) and Tenant each hereby waives on behalf of itself and its property insurers (none of which shall ever be assigned any such claim or be entitled thereto due to subrogation or otherwise) any and all rights of recovery, claim, action, or cause of action against the other (including the Board) and its agents, officers, servants, partners, shareholders, or employees (collectively, the "**Related Parties**") for any loss or damage that may occur to or within the Premises or the Building or any improvements thereto, or any personal property of such party therein which is insured against under any Property Insurance (as defined in Section 14.8) policy actually being maintained by the waiving party from time to time, even if not required hereunder, or which would be insured against under the terms of any Property Insurance policy required to be carried or maintained by the waiving party hereunder, whether or not such insurance coverage is actually being maintained, including, in every instance, such loss or damage that may be caused by the negligence of the other party hereto and/or its Related Parties. All Property Insurance policies shall be endorsed to provide a waiver of subrogation consistent with the foregoing provisions in favor of the Board, MD Anderson, and/or Tenant, as applicable.

14.7 Tenant's Acts—Effect on Insurance. Tenant shall not do or permit any Tenant Party to do any act or thing upon the Premises or elsewhere in the Building which will invalidate or be in conflict with any insurance policies covering the Building and the fixtures and property therein; and shall not do, or permit to be done, any act or thing upon the Premises which shall subject Landlord to any liability or responsibility for injury to any person or persons or to property by reason of any business or operation being carried on upon said Premises or for any other reason. Landlord acknowledging that the use of the Premises for the Permitted Uses, generally, shall not be deemed to result in a default under this Section 14.7.

14.8 Landlord's Insurance.

(a) Landlord, subject to subsections (b), (c) and (d) below, shall carry at all times during the Term of this Lease: (i) commercial general liability insurance with respect to the Campus, Property and the Common Areas thereof in an amount not less than Five Million Dollars ($5,000,000) combined single limit per occurrence; provided that for so long as Landlord is an agency of the State of Texas, Landlord shall not be obligated to maintain the insurance coverage set forth this clause (i), and (ii) with respect to the Building, excluding Tenant-Insured Improvements and improvements made by other tenants or occupants, insurance against loss or damage caused by any peril covered under fire, extended coverage and all risk insurance with coverage against vandalism, malicious mischief and such other insurable hazards and contingencies as are from time to time normally insured against by owners of similar first class offices/research/laboratory buildings/campuses in the Market Area or which are required by Landlord's mortgagee, in an amount equal to one hundred percent (100%) of the full replacement cost thereof above foundation walls ("**Landlord Property Insurance**"). Any and all such insurance: (x) may be maintained under a blanket policy affecting other properties of Landlord and/or its affiliated business organizations, and (y) may be written with commercially reasonable deductibles as determined by Landlord. Tenant Property Insurance and Landlord Property Insurance are referred to collectively herein as "**Property Insurance**".

(b) Tenant acknowledges that Landlord is an agency of the State of Texas and has only such authority to obtain insurance for third parties as is granted to Landlord by state law or as may be reasonably implied by such law. For so long as Landlord is an agency of the State of Texas and is so limited, Landlord shall have no obligation under this Agreement to obtain policies of insurance and shall have the right, in Landlord's sole discretion, to determine whether Landlord will maintain policies of insurance, operate programs of self-insurance, or utilize any other program of risk-protection in connection with Landlord's property.

(c) Tenant acknowledges that because Landlord is an agency of the State of Texas, liability for the tortious conduct of the agents and employees of Landlord (other than the medical liability of medical staff physicians) or for injuries caused by conditions of tangible state property is subject to the provisions of the Texas Tort Claims Act, Texas Civil Practice and Remedies Code, Chapter 101, as amended from time to time, if and to the extent applicable.

(d) Workers compensation insurance coverage for employees of Landlord will be provided by Landlord as mandated by the provisions of Texas Labor Code, Chapter 503, as amended from time to time.

15. CASUALTY; TAKING

15.1 Damage. If the Premises, Parking Lot or any of the Common Areas serving the Premises are damaged in whole or part because of fire or other casualty ("**Casualty**"), or if the Premises, Parking Lot or any of the Common Areas serving the Premises are subject to a taking in connection with the exercise of any power of eminent domain, condemnation, or purchase under threat or in lieu thereof (any of the foregoing, a "**Taking**"), then unless this Lease is terminated in accordance with Section 15.2 below, Landlord shall restore the Building, Parking Lot and/or the Premises to substantially the same condition as existed on the Term Commencement Date, or in the event of a partial Taking which affects the Building, Parking Lot or the Premises, restore the remainder of the Building, Parking Lot and the Premises not so Taken to substantially the same condition as is reasonably feasible. Subject to actual delays in the substantial completion of Landlord's restoration work caused by the acts or wrongful or negligent omissions of any of the Tenant Parties of which Tenant has prior written notice, and applicable Legal Requirements then in existence, and instances of Force Majeure, Landlord shall substantially complete such restoration within one (1) year from the date of such Casualty or Taking. Landlord shall deliver to Tenant a construction schedule prepared by Landlord's general contractor (the "**Restoration Estimate**") as soon as reasonably possible and in any event within ninety (90) days after the occurrence of the applicable Casualty or Taking, which schedule shall include any period necessary for the permitting or approval of such restoration by applicable authorities having jurisdiction over such work. Upon substantial completion of such restoration by Landlord, Tenant shall use diligent efforts to complete restoration of the Premises to substantially the same condition as existed immediately prior to such Casualty or Taking, as the case may be, as soon as reasonably possible. In connection with Tenant's restoration obligations hereunder, Landlord shall provide Tenant with copies of the plans for Landlord's restoration work upon Tenant's request. Tenant agrees to cooperate with Landlord in such manner as Landlord may reasonably request (at no cost to Tenant) to assist Landlord in collecting insurance proceeds due in connection with any Casualty which affects the Premises or the Building. In no event shall Landlord be required to expend more than the Net (hereinafter defined) insurance proceeds Landlord receives for damage to the Premises and/or the Building or the Net Taking award attributable to the Premises and/or the Building. "**Net**" means the insurance proceeds or Taking award actually paid less all reasonable costs and expenses, including adjusters and attorney's fees, of obtaining the same. Under no circumstances shall Landlord be required to repair any damage to, or make any repairs to or replacements of, Tenant's Work or any other Alterations.

15.2 Termination Rights.

(a) Landlord's Termination Rights. Landlord may terminate this Lease upon thirty (30) days' prior written notice to Tenant if:

(i) more than thirty-five percent (35%) of the Building or any material means of access thereto is taken; or

(ii) more than thirty-five percent (35%) of the Building is damaged by Casualty.

(b) Tenant's Termination Rights. If Landlord fails to substantially complete restoration of the Premises, subject to the conditions set forth in Section 15.1 above, within the timeframe set forth in the Restoration Estimate, or fails to promptly (within 60 days following the occurrence of such Casualty) commence and to thereafter diligently prosecute such restoration (it being acknowledged that commencing the design of the improvements necessary for such restoration shall constitute "commencement" of such restoration), then Tenant may terminate this Lease upon thirty (30) days' written notice to Landlord. The remedies set forth in this Section 15.2(b) and in Section 15.2(c) below are Tenant's sole and exclusive rights and remedies based upon Landlord's failure to complete the restoration of the Premises as set forth herein. Notwithstanding anything to the contrary contained herein, Tenant shall not have the right to terminate this Lease pursuant to this Section 15 if the Casualty was caused by the negligence or intentional misconduct of any Tenant Party.

(c) Additional Termination Rights. Tenant shall have the right to terminate this Lease upon thirty (30) days' written notice to Landlord if the estimated time to complete restoration (as set forth in the Restoration Estimate) exceeds twelve (12) months. In addition, in the case of any Casualty or Taking affecting the Premises and occurring during the last fifteen (15) months of the Term, then (i) if such Casualty or Taking results in more than twenty-five percent (25%) of the floor area of the Premises being unsuitable for the Permitted Uses, or (ii) the damage to the Premises costs more than $250,000 to restore, then either party shall have the option to terminate this Lease upon thirty (30) days' written notice to the other.

(d) Automatic Termination. In the case of a Taking of the entire Premises, then this Lease shall automatically terminate as of the date of possession by the Taking authority.

15.3 Rent Abatement. In the event of any Casualty or Taking affecting the Premises and/or all material means of access thereto, Base Rent and Tenant's regular monthly payments of Additional Rent on account of Taxes shall be equitably abated for the period from the date of such Casualty or Taking until the earlier of (a) the date that Landlord substantially completes Landlord's restoration work (provided that if Landlord would have completed Landlord's restoration work at an earlier date but for delays caused by the acts or wrongful or negligent omissions of any of the Tenant Parties of which Tenant has prior notice, then the Premises shall be deemed to have been repaired and restored on such earlier date) plus an additional period equal to the timeframe set forth in a construction schedule prepared by Tenant's general contractor (a copy of which construction schedule shall be delivered to Landlord within ninety (90) days after the date of the Casualty or Taking) for the performance of Tenant's restoration obligations, assuming such restoration obligations shall commence within ten (10) Business Days after Landlord substantially completes Landlord's restoration obligations; provided that if Tenant is delayed in completing Tenant's restoration work due to Landlord delays, then Tenant's restoration abatement period shall be extended on a day for day basis, or (b) the date Tenant or other occupant reoccupies any portion of the Premises for the conduct of its business (in which case the Base Rent and Additional Rent allocable to such reoccupied portion shall be payable by Tenant from the date of such occupancy). The reasonable determination of Landlord's architect of the date Landlord's restoration to the Premises shall have been substantially completed shall be controlling unless Tenant disputes same by notice to Landlord given within fifteen (15) Business Days after receipt of written notice from Landlord setting forth such determination by Landlord, and pending resolution of such dispute, Tenant's restoration period (and Tenant's obligation to re-commence the payment of Rent) shall commence in accordance with Landlord's determination. In the event of a Taking where this Lease is not terminated, a just proportion of the Rent, based on the nature and extent of the interference with Tenant's business operations, shall be abated for the duration of the Taking.

15.4 Taking for Temporary Use. If the Premises are Taken for temporary use, this Lease and Tenant's obligations, shall continue, provided however, Base Rent and Tenant's regular monthly payments of Additional Rent on account of Taxes shall be equitably abated for the period of such Taking for temporary use. For purposes hereof, a "**Taking for temporary use**" shall mean a Taking of ninety (90) days or less.

15.5 Disposition of Awards. Except for any separate award for Tenant's movable trade fixtures, relocation expenses, leasehold improvements performed by or on behalf of Tenant, and Tenant's Property, all Taking awards to Landlord or Tenant shall be Landlord's property without Tenant's participation, and Tenant hereby assigns to Landlord Tenant's interest, if any, in such award. Tenant may pursue its own claim against the Taking authority. Landlord hereby agrees not to seek any award for Tenant's movable trade fixtures, relocation expenses, leasehold improvements performed by or on behalf of Tenant, and Tenant's Property. In addition, and for the avoidance of doubt, in the event this Lease is terminated as a result of a casualty in accordance with the terms of this Article 15, Tenant shall be entitled to the proceeds of all Tenant's Insurance Policies, with the exception of any proceeds for damage to the Premises collected by Tenant under Tenant's Damage to the Premises Rented to You coverage.

16. ESTOPPEL CERTIFICATE.

Each party shall at any time and from time to time upon not less than twenty (20) Business Days' prior notice from the other, execute, acknowledge and deliver to the other a statement in writing certifying that this Lease is unmodified and in full force and effect (or if there have been modifications, that the same is in full force and effect as modified and stating the modifications), the dates to which rent has been paid in advance, if any, whether or not, to the certifying party's knowledge, the other party is in default in performance of any covenant, agreement, term, provision or condition contained in this Lease and, if so, specifying each such default, and such other facts related to the rights and/or obligations of the parties under this Lease or the condition of the Premises or Property as the requesting party may reasonably request, it being intended that any such statement delivered pursuant hereto may be relied upon by any prospective purchaser of the Building or of any interest of Landlord therein, any Mortgagee or prospective Mortgagee thereof, any lessor or prospective lessor thereof, any prospective assignee of any Mortgage thereof or any assignee or prospective assignee or transferee of Landlord's or Tenant's interest herein. Time is of the essence with respect to any such requested certificate, each party hereby acknowledging the importance of such certificates in mortgage financing arrangements, prospective sales and the like.

17. HAZARDOUS MATERIALS

17.1 Prohibition. Except for standard office, cleaning and maintenance supplies used in ordinary amounts and stored in proper containers in compliance with all Environmental Laws, Tenant shall not, without the prior written consent of Landlord, bring or permit to be brought, kept or used at, in or on the Premises or elsewhere in the Building or the Property any Hazardous Material other than Tenant's Hazardous Materials, provided that the same shall at all times be brought upon, kept or used only (a) in so-called "control areas" to the extent required by Environmental Laws and (b) in accordance with all Environmental Laws and prudent environmental and biosafety practice. To the extent not Landlord's obligation under this Lease, Tenant shall be responsible for assuring that all laboratory uses are adequately and properly vented in accordance with applicable Legal Requirements. Tenant shall, at its sole cost and expense, comply with all Environmental Laws with respect to the use, storage, handling and disposal of Hazardous Materials. Landlord shall have the right, from time to time, but not more than once per year unless Landlord has reasonable cause, to inspect the Premises for compliance with the terms of this Section 17.1 at Landlord's sole cost and expense.

17.2 Environmental Laws. For purposes hereof, "**Environmental Laws**" shall mean all applicable laws, statutes, ordinances, rules, regulations and policies of any local, state or federal governmental authority having jurisdiction concerning environmental, health and safety matters, including but not limited to any discharge into the air, surface water, sewers, soil or groundwater of any Hazardous Material whether within or outside the Premises, including, without limitation (a) the Federal Water Pollution Control Act, 33 U.S.C. Section 1251 et seq., (b) the Federal Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq. ("**RCRA**"), (c) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601 et seq., and (d) the Toxic Substances Control Act of 1976, 15 U.S.C. Section 2601 et seq.

17.3 Hazardous Material Defined.

(a) As used herein, the term "**Hazardous Material**" means asbestos, oil or any hazardous, radioactive or toxic substance, material or waste or petroleum derivative which is or becomes regulated by any Environmental Law, including without limitation live organisms, viruses and fungi, medical waste and any so-called "biohazard" materials regulated by any Environmental Law. The term "**Hazardous Material**" includes, without limitation, oil and/or any material or substance which is designated as a "hazardous substance," "hazardous material," "oil," "hazardous waste" or toxic substance under any Environmental Law.

(b) For purposes hereof, "**Tenant's Hazardous Materials**" shall mean all Hazardous Materials brought, kept, used or disposed of by Tenant at, in or on the Premises for the Permitted Uses, and those Hazardous Materials listed in Tenant's submissions concerning the Premises to any governmental authorities, including, without limitation, the City of Houston Fire Department.

17.4 Chemical Safety Program. Tenant shall establish and maintain a chemical safety program administered by a licensed, qualified individual in accordance with the requirements of any applicable governmental authority. Tenant shall be solely responsible for all costs incurred in connection with such chemical safety program. Not more than thirty (30) days prior to the commencement of lab operations within the Premises, Tenant shall provide Landlord with (i) a written description and Tenant's proposed safety procedures for the laboratory to be established by Tenant in the Premises; and (ii) a list of the chemicals to be used in said laboratory; and (iii) the relevant laboratory and environmental safety documents promulgated by Tenant that are applicable to Tenant's permitted operations in the Premises. Tenant shall obtain and maintain during the Term any permit required by any such applicable governmental authority.

17.5 Testing. If any Mortgagee or governmental authority requires testing to determine whether there has been any release of Hazardous Materials in violation of any Environmental Law or that results in a requirement to perform any response action(s) pursuant to applicable Environmental Laws and the results of such testing and any other relevant information establish that such release is the result of the acts or omissions of any of the Tenant Parties, then, subject to the terms and conditions of this Lease, Landlord shall be entitled to perform such testing. Tenant shall be entitled to conduct its own testing and investigations to refute the conclusions of the results of such testing by Landlord so long as Tenant provides Landlord with a written scope of work concerning such testing and investigations to be performed on behalf of Tenant at least one week in advance of the date that Tenant begins such work.

17.6 Removal. Tenant shall be responsible, at its sole cost and expense, for Hazardous Material and other biohazard disposal services for the Premises for Hazardous Materials brought in, on, at, under or about the Premises by or on behalf of any of the Tenant Parties. Such services shall be performed by contractors reasonably acceptable to Landlord and on a sufficient basis to ensure that the Premises are at all times kept neat, clean and in compliance with applicable Environmental Laws relating to Hazardous Materials. Biohazards shall be kept in appropriate, specially marked containers, as required by Environmental Law, which containers shall be removed at the expiration or earlier termination of the Term. The foregoing shall not be deemed to derogate from Tenant's obligations under Section 21.1 of this Lease.

17.7 Landlord's Responsibilities. To Landlord's actual knowledge without duty of inquiry, as of the Execution Date, the Property and Premises are in compliance with all applicable Environmental Laws, including OSHA, and no Hazardous Materials have been released at, in, on, or under the Property or Premises. Except to the extent such violation relates to the act or omission of any of the Tenant Parties, Landlord shall, to the extent required by an applicable Environmental Law, take all steps necessary to remedy any violation of any applicable Environmental Law at the Property and Premises during the Term, and Landlord shall take all steps necessary to ensure the cleanup or remediation of any Hazardous Materials or biological materials at the Property and Premises to the extent required so as to be in compliance with all applicable Environmental Law, unless the condition requiring such cleanup or remediation was caused by any of the Tenant Parties.

17.8 Hazardous Materials Indemnity. Except to the extent contributed to or exacerbated by the Landlord Parties, Tenant shall indemnify, defend (with counsel reasonably acceptable to Landlord) and hold Landlord harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities and losses (including, without limitation, reasonable attorneys' fees, consultant and expert fees) arising during or after the Term as a result of: (i) the presence of Hazardous Materials in amounts in excess of reportable quantities or reportable concentrations (in each case as required under Environmental Laws) or in amounts requiring a response action pursuant to any Environmental Law at, in, on or under the Premises, in each case to the extent the presence of such Hazardous Materials is caused by any act or omission of any of the Tenant Parties, or (ii) a breach by Tenant of its obligations under this Article 17.

18. RULES AND REGULATIONS.

Tenant will faithfully observe and comply with the reasonable Rules and Regulations as may be promulgated, from time to time, with respect to the day-to-day operation of the Building, the Property and construction within the Property of which Tenant has reasonable prior written notice (collectively, the "**Rules and Regulations**"); provided however, such Rules and Regulations shall not materially interfere with Tenant's use of the Premises for the Permitted Use, nor impose any material cost or liability on Tenant. Landlord agrees to implement the Rules and Regulations and enforce the Rules and Regulations against all tenants in a uniform and non-discriminatory manner. In the case of any conflict between the provisions of this Lease and any future rules and regulations, the provisions of this Lease shall control.

19. LAWS AND PERMITS.

19.1 Legal Requirements. Tenant shall not cause or permit the Premises, or cause the Property or the Building to be used in any way that violates any Legal Requirement, order, permit, approval, variance, covenant or restrictions of record or any provisions of this Lease, or materially interferes with the rights of tenants of the Building. Tenant shall obtain, maintain and pay for all permits and approvals needed for the operation of Tenant's business and/or Tenant's Rooftop Equipment, as soon as reasonably possible, and in any event shall not undertake any operations or use of Tenant's Rooftop Equipment unless all applicable permits and approvals are in place and shall, promptly take all actions necessary to comply with all Legal Requirements, including, without limitation, the Occupational Safety and Health Act, applicable to Tenant's use of the Premises, the Property or the Building. Tenant shall maintain in full force and effect all certifications or permissions required by any authority having jurisdiction to authorize, franchise or regulate Tenant's use of the Premises. Tenant shall be solely responsible for procuring and complying at all times with any and all necessary permits and approvals directly or indirectly relating or incident to: the conduct of its activities on the Premises; its scientific experimentation, transportation, storage, handling, use and disposal of any chemical or radioactive or bacteriological or pathological substances or organisms or other hazardous wastes or environmentally dangerous substances or materials or medical waste or animals or laboratory specimens. Within fifteen (15) Business Days of a request by Landlord, which request shall be made not more than once during each period of twelve (12) consecutive months during the Term hereof, unless otherwise requested pursuant to an audit of the State of Texas, by any mortgagee of Landlord or unless Landlord reasonably suspects that Tenant has violated the provisions of this Section 19.1, Tenant shall furnish Landlord with copies of all such permits and approvals that Tenant possesses or has obtained.

19.2 Compliance with Healthcare Laws. Each party enters into this Agreement with the intent of conducting their relationship by and between Landlord and Tenant in full compliance with, and shall comply with, (i) the federal anti-referral laws known as the "Stark" law, the Medicare and Medicaid Anti-Fraud and Abuse law, including but not limited to the federal Anti-Kickback Statute and the federal beneficiary inducement civil monetary penalty statute, and (ii) the Texas Occupations Code patient non-solicitation law. Notwithstanding any unanticipated effect of any of the provisions in this Agreement, Landlord and Tenant each agree that it will intentionally conduct itself under the terms of this Agreement in a manner so as to avoid a violation of the Stark Law, the Medicare and Medicaid Anti-Fraud and Abuse law, and the Texas Occupations Code patient non-solicitation law.

20. DEFAULT

20.1 Events of Default. The occurrence of any one or more of the following events shall constitute an "**Event of Default**" hereunder by Tenant:

(a) If Tenant fails to make any payment of Rent or any other payment required hereunder, as and when due, and such failure shall continue for a period of five (5) Business Days after notice thereof from Landlord to Tenant (a "**Monetary Event of Default**");

(b) If Tenant shall fail to execute and deliver to Landlord an estoppel certificate pursuant to Section 16 above or a subordination and attornment agreement pursuant to Section 22 below, within the timeframes set forth therein, and such failure shall continue for a period of five (5) Business Days after notice thereof from Landlord to Tenant;

(c) If Tenant shall fail to maintain any insurance required hereunder and such failure shall continue for a period of ten (10) Business Days after notice thereof from Landlord to Tenant;

(d) If Tenant shall make a Transfer in violation of the provisions of Article 13 above, or if any event shall occur or any contingency shall arise whereby this Lease, or the term and estate thereby created, would (by operation of law or otherwise) devolve upon or pass to any person, firm or corporation other than Tenant, except as expressly permitted by Article 13 hereof, and Tenant does not cure such default with ten (10) Business Days following notice from Landlord;

(e) The failure by Tenant to observe or perform any of the covenants or provisions of this Lease to be observed or performed by Tenant, other than as specified above, and such failure continues for more than thirty (30) days after notice thereof from Landlord; provided, further, that if the nature of Tenant's default is such that more than thirty (30) days are reasonably required for its cure, then Tenant shall not be deemed to be in default if Tenant shall commence such cure within said thirty (30) day period and thereafter diligently prosecute such cure to completion;

(f) Tenant shall admit in writing Tenant's inability to pay its debts generally as they become due, or by the making or offering to make a composition of its debts with its creditors;

(g) Tenant shall make an assignment or trust mortgage, or other conveyance or transfer of like nature, of all or a substantial part of its property for the benefit of its creditors;

(h) a receiver, sequesterer, trustee or similar officer shall be appointed by a court of competent jurisdiction to take charge of all or any part of Tenant's Property and such appointment shall not be vacated within thirty (30) days; or

(i) any proceeding shall be instituted by or against Tenant pursuant to any of the provisions of any Act of Congress or State law relating to bankruptcy, reorganizations, arrangements, compositions or other relief from creditors, and, in the case of any proceeding instituted against it, if Tenant shall fail to have such proceedings dismissed within ninety (90) days or if Tenant is adjudged bankrupt or insolvent as a result of any such proceeding.

20.2 Remedies. Upon an Event of Default, Landlord may, by notice to Tenant, elect to terminate this Lease; and thereupon (and without prejudice to any remedies which might otherwise be available for arrears of Rent or preceding breach of covenant or agreement and without prejudice to Tenant's liability for damages as hereinafter stated), upon the giving of such notice, this Lease shall terminate as of the date specified therein as though that were the Expiration Date. Following such termination, without being taken or deemed to be guilty of any manner of trespass or conversion, and without being liable to indictment, prosecution or damages therefor, Landlord may, by lawful process, enter into and upon the Premises (or any part thereof in the name of the whole); repossess the same, as of its former estate; and expel Tenant and those claiming under Tenant. The words "re-entry" and "re-enter" as used in this Lease are not restricted to their technical legal meanings.

20.3 Damages - Termination.

(a) Upon the termination of this Lease under the provisions of this Article 20, Tenant shall pay to Landlord Rent up to the time of such termination, shall continue to be liable for any preceding breach of covenant, and in addition, shall pay to Landlord as damages, at the election of Landlord, either:

(i) the amount (discounted to present value at the rate of eight percent (8%) per annum) by which, at the time of the termination of this Lease (or at any time thereafter if Landlord shall have initially elected damages under Section 20.3(a)(ii) below), (x) the aggregate of Rent projected over the period commencing with such termination and ending on the Expiration Date, exceeds (y) the aggregate projected rental value of the Premises for such period, taking into account a reasonable time period during which the Premises shall be unoccupied, plus all Reletting Costs (hereinafter defined); or

(ii) amounts equal to Rent which would have been payable by Tenant had this Lease not been so terminated, payable upon the due dates therefor specified herein following such termination and until the Expiration Date, *provided*, *however*, if Landlord shall re-let the Premises during such period, that Landlord shall credit Tenant with the net rents received by Landlord from such re-letting, such net rents to be determined by first deducting from the gross rents as and when received by Landlord from such re-letting the expenses incurred or paid by Landlord in terminating this Lease, as well as the expenses of re-letting, including altering and preparing the Premises for new tenants, brokers' commissions, and all other similar and dissimilar expenses properly chargeable against the Premises and the rental therefrom (collectively, "**Reletting Costs**"), it being understood that any such re-letting may be for a period equal to or shorter or longer than the remaining Term; and *provided*, *further*, that (x) in no event shall Tenant be entitled to receive any excess of such net rents over the sums payable by Tenant to Landlord hereunder and (y) in no event shall Tenant be entitled in any suit for the collection of damages pursuant to this Section 20.3(a)(ii) to a credit in respect of any net rents from a re-letting except to the extent that such net rents are actually received by Landlord prior to the commencement of such suit. If the Premises or any part thereof should be re-let in combination with other space, then proper apportionment on a square foot area basis shall be made of the rent received from such re-letting and of the expenses of re-letting.

(b) In calculating the amount due under Section 20.3(a)(i), above, there shall be included, in addition to the Base Rent, all other considerations agreed to be paid or performed by Tenant, including without limitation Tenant's Share of Taxes, on the assumption that all such amounts and considerations would have increased at the rate of three percent (3%) per annum for the balance of the full term hereby granted.

(c) Suit or suits for the recovery of such damages, or any installments thereof, may be brought by Landlord from time to time at its election, and nothing contained herein shall be deemed to require Landlord to postpone suit until the date when the Term would have expired if it had not been terminated hereunder.

(d) Landlord shall use reasonable efforts to mitigate its damages in the event of any default by Tenant hereunder, however, Landlord's obligation to relet the Premises shall be subject to the reasonable requirements of Landlord to lease other available space for comparable use prior to reletting the Premises and to lease to high quality tenants in a harmonious manner with an appropriate mix of uses, tenants, floor areas and terms of tenancies, and the like.

20.4 Landlord's Self-Help; Fees and Expenses. If an Event of Default results from Tenant's failure to perform any covenant set forth in this Lease, including without limitation the obligation to maintain the Premises in the required condition pursuant to Section 10.1 above, Landlord may, upon not less than ten (10) Business Days' prior notice, perform the same for the account of Tenant. Tenant shall pay to Landlord upon demand therefor any costs incurred by Landlord in connection therewith, together with interest at the Default Rate until paid in full.

20.5 Waiver of Redemption, Statutory Notice and Grace Periods. Tenant does hereby waive and surrender all rights and privileges which it might have under or by reason of any present or future Legal Requirements to redeem the Premises or to have a continuance of this Lease for the Term hereby demised after being dispossessed or ejected therefrom by process of law or under the terms of this Lease or after the termination of this Lease as herein provided. Except to the extent prohibited by Legal Requirements, any statutory notice and grace periods provided to Tenant by law are hereby expressly waived by Tenant.

20.6 Landlord's Remedies Not Exclusive. The specified remedies to which Landlord may resort hereunder are cumulative and are not intended to be exclusive of any remedies or means of redress to which Landlord may at any time be lawfully entitled, and Landlord may invoke any remedy (including the remedy of specific performance) allowed at law or in equity as if specific remedies were not herein provided for.

20.7 No Waiver. Landlord's failure to seek redress for violation, or to insist upon the strict performance, of any covenant or condition of this Lease, or any of the Rules and Regulations promulgated hereunder, shall not prevent a subsequent act, which would have originally constituted a violation, from having all the force and effect of an original violation. The receipt by Landlord of Rent with knowledge of the breach of any covenant of this Lease shall not be deemed a waiver of such breach. No provisions of this Lease shall be deemed to have been waived by either party unless such waiver be in writing signed by such party. No payment by Tenant or receipt by Landlord of a lesser amount than the Rent herein stipulated shall be deemed to be other than on account of the stipulated Rent, nor shall any endorsement or statement on any check or any letter accompanying any check or payment as Rent be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such Rent or pursue any other remedy in this Lease provided.

20.8 Intentionally Omitted.

20.9 Landlord Default.

(a) Notwithstanding anything to the contrary contained in this Lease, Landlord shall in no event be in default in the performance of any of Landlord's obligations under this Lease unless Landlord shall have failed to (i) pay any sum to Tenant as and when required by the terms of this Lease and such failure continues for ten (10) business days after receipt of a written notice; (ii) except as set forth in Section 20.9(a)(iii) below, perform any non-monetary obligation within thirty (30) days (or such additional time as is reasonably required to correct any such default, provided Landlord commences cure within thirty (30) days and diligently and continuously pursues the same to completion) after notice by Tenant to Landlord properly specifying wherein Landlord has failed to perform any such obligation; or (iii) perform any non-monetary obligation within five (5) Business Days after notice by Tenant to Landlord properly specifying wherein Landlord has failed to perform any such obligation, resulting in a condition that poses an imminent risk of injury or damage to life or property (including, without limitation, Tenant's manufacturing and/or research and development processes) or a material disruption to Tenant's operations within the Premises. Nothing in this Section 20.9 shall extend or delay Tenant's rights of rent abatement under Section 9.5(b).

(b) If Landlord is in default under this Lease (determined in accordance with Section 20.9(a) above), and if such failure materially adversely affects Tenant's ability to operate its business in the ordinary course in accordance with the terms of this Lease, then Tenant shall have the right to cure such default on Landlord's behalf, in which event Landlord shall reimburse Tenant within thirty (30) days after receipt of a reasonably detailed invoice for all reasonable costs and expenses incurred by Tenant in connection therewith. If Landlord fails to timely reimburse Tenant for such costs and expenses, then, without in any way limiting Tenant's right at law or equity, Tenant shall have the right to recover the same by an abatement of Base Rent, provided that (A) such abatement shall cease at such time as and to the extent that payment is tendered to Tenant; and (B) if the amount of the abatement is more than twenty-five percent (25%) of the amount of Base Rent due in any month, then the amount abated in any one month shall not exceed twenty-five percent (25%) of the Base Rent and the excess amount of the abatement shall be carried forward with interest at the Default Rate. Tenant's self-help rights under this Section 20.9(b) shall be exercised by Tenant only (i) with respect to conditions that materially adversely affect Tenant's ability to operate its business in the ordinary course in accordance with the terms of this Lease, and (ii) after Tenant has provided Landlord with notice of Tenant's intention to exercise such right (which notice shall conspicuously state the following in bold caps: "**TENANT NOTICE OF INTENTION TO EXERCISE SELF-HELP**" and which notice shall include an explicit statement that such notice is a notice delivered pursuant to this Section 20.9(b) and Landlord's failure to perform the specified obligation will trigger the provisions of this Section 20.9(b), and which notice shall include a copy of the default notice delivered pursuant to Section 20.9(a) above), and Landlord has failed to remedy the condition complained of within five (5) days after its receipt of such notice. In the event of any condition posing an imminent risk of injury or damage to life or property (including, without limitation Tenant's manufacturing and/or research and development processes) or a material disruption to Tenant's operations within the Premises, Tenant's notice to Landlord under the preceding clause (ii) may be given simultaneously with a default notice as set forth in Section 20.9(a), and Tenant may proceed with its cure if Landlord fails to cure such default within one (1) Business Day thereafter.

(c) Except as expressly set forth in this Lease, Tenant shall not have the right to terminate or cancel this Lease or to withhold rent or to set-off or deduct any claim or damages against rent as a result of any default by Landlord or breach by Landlord of its covenants or any warranties or promises hereunder, except in the case of a wrongful eviction of Tenant from the Premises (constructive or actual) by Landlord, unless same continues after notice to Landlord thereof and an opportunity for Landlord to cure the same as set forth above. In addition, except as expressly set forth in this Lease, Tenant shall not assert any right to deduct the cost of repairs or any monetary claim against Landlord from rent thereafter due and payable under this Lease.

21. SURRENDER; ABANDONED PROPERTY; HOLD-OVER

21.1 Surrender. Upon the expiration or earlier termination of the Term, Tenant shall (i) peaceably quit and surrender to Landlord the Premises broom clean, in the condition in which Tenant is obligated to maintain the same excepting only ordinary wear and tear and damage by fire or other Casualty; (ii) remove all of Tenant's Property, all autoclaves and cage washers, and, to the extent specified by Landlord in accordance with Section 11.1 above, or as Tenant otherwise elects, Alterations made by Tenant; and (iii) repair any damages to the Premises or the Building caused by the removal of Tenant's Property and/or any such Alterations. Tenant's obligations under this Section 21.1 shall survive the expiration or earlier termination of this Lease. No act or thing done by Landlord during the Term shall be deemed an acceptance of a surrender of the Premises, and no agreement to accept such surrender shall be valid, unless in writing signed by Landlord. The delivery of keys to any employee of Landlord or of Landlord's agents shall not operate as a termination of this Lease or a surrender of the Premises.

21.2 Abandoned Property. After the expiration or earlier termination hereof, if Tenant fails to remove any property from the Building or the Premises which Tenant is obligated by the terms of this Lease to remove within ten (10) Business Days after written notice from Landlord, such property (the "**Abandoned Property**") shall be conclusively deemed to have been abandoned, and may either be retained by Landlord as its property or sold or otherwise disposed of in such manner as Landlord may see fit. If any item of Abandoned Property shall be sold, Tenant hereby agrees that Landlord may receive and retain the proceeds of such sale and apply the same, at its option, to the expenses of the sale, the cost of moving and storage, any damages to which Landlord may be entitled under Article 20 hereof or pursuant to law, and to any arrears of Rent.

21.3 Holdover. If any of the Tenant Parties holds over in the Premises after the end of the Term, Tenant shall be deemed a tenant-at-sufferance subject to the provisions of this Lease; provided that whether or not Landlord has previously accepted payments of Rent from Tenant, (i) Tenant shall pay Base Rent at 150% of the highest rate of Base Rent payable during the Term with respect to the first sixty (60) days of such holdover, and at 200% of such rate thereafter, and (ii) Tenant shall continue to pay to Landlord all Additional Rent. In addition, in the event Tenant holds over for a period in excess of sixty (60) days, Tenant shall be liable for all damages, including without limitation lost business and consequential damages, incurred by Landlord as a result of such holding over (provided, however, in no event shall Tenant be liable for punitive damages), Tenant hereby acknowledging that Landlord may require the Premises following the expiration of the Term for other tenants and that the damages which Landlord may suffer as the result of Tenant's holding over cannot be determined as of the Execution Date. Nothing contained herein shall grant Tenant the right to hold over after the expiration or earlier termination of the Term. Tenant's obligations under this Section 21.3 shall survive the expiration or earlier termination of this Lease.

22. MORTGAGEE RIGHTS

22.1 Subordination. As a condition to Tenant's agreement to subordinate Tenant's interest in this Lease to any current and future ground lease, overleases, mortgage, deed of trust, or similar instrument covering the Premises, the Property and to all advances, modifications, renewals, replacements, and extensions thereof (each of the foregoing, a "**Mortgage**"), Landlord shall obtain from each such Mortgagee, a commercially reasonable subordination, attornment and non-disturbance agreement in a form reasonably acceptable to Tenant (a "**Non-disturbance Agreement**"), pursuant to which such Mortgagee shall agree that if and so long as no Event of Default hereunder shall have occurred and be continuing, the leasehold estate granted to Tenant and the rights of Tenant pursuant to this Lease to quiet and peaceful possession of the Premises in accordance with and subject to the terms and conditions of this Lease, and this Lease shall not be terminated, modified, affected or disturbed by any action which such Mortgagee may take to foreclose any such Mortgage or to terminate such superior lease, as applicable, and that any successor landlord shall recognize this Lease as being in full force and effect as if it were a direct lease between such successor landlord and Tenant upon all of the terms, covenants, conditions and options granted to Tenant under this Lease. Tenant further shall attorn to and recognize any successor landlord so long as Tenant has entered into a Non-disturbance Agreement with such successor landlord or its predecessor in interest, whether through foreclosure or otherwise, as if the successor landlord were the originally named landlord. Tenant agrees to execute, acknowledge and deliver such instruments, confirming such subordination and attornment in commercially reasonable form within fifteen (15) days of request therefor. Tenant shall have the right to record the Non-disturbance Agreement if not recorded by the Mortgagee. In the event of any conflict between the terms of a Non-disturbance Agreement and this Article 22, the terms of the Non-disturbance Agreement in question shall prevail. A Non-disturbance Agreement may condition the release of any insurance proceeds for restoration of a material casualty on the following: there not being an Event of Default hereunder; this Lease shall remain in full force and effect; and only such other reasonable conditions customarily imposed by reasonable lenders in similar transactions, taking into consideration Tenant's credit-standing and Tenant's need for the space to be restored to continue its operations.

22.2 Mortgagee Liability. Tenant acknowledges and agrees that if any Mortgage shall be foreclosed and Tenant is a party to a Non-disturbance Agreement with the party holding such Mortgage, (a) the liability of the Mortgagee and its successors and assigns shall exist only so long as such Mortgagee or purchaser is the owner of the Premises, and such liability shall not continue or survive after further transfer of ownership; and (b) such Mortgagee and its successors or assigns shall not be (i) liable for any act or omission of any prior lessor under this Lease; (ii) liable for the performance of Landlord's covenants pursuant to the provisions of this Lease which arise and accrue prior to such entity succeeding to the interest of Landlord under this Lease or acquiring such right to possession; (iii) subject to any offsets or defense which Tenant may have at any time against Landlord (other than Tenant's express offset rights under this Lease, except that Tenant shall not have the right to apply the Remaining Funds towards Rent due hereunder for so long as any Mortgagee and its successors or assigns are in possession of the Building); or (iv) bound by any base rent or other sum which Tenant may have paid more than one (1) month in advance. Nothing in the immediately preceding sentence shall relieve such Mortgagee and its successors and assigns of the obligation to fulfill the obligations of Landlord from and after the date they succeed to the interest of Landlord hereunder (e.g., to cure any then-continuing default).

23. QUIET ENJOYMENT.

Landlord covenants that so long as there is no Event of Default, Tenant shall peaceably and quietly hold, occupy and enjoy the Premises during the Term from and against the claims of all persons lawfully claiming by, through or under Landlord subject, nevertheless, to the covenants, agreements, terms, provisions and conditions of this Lease, and to any Mortgage to which this Lease is subject and subordinate, as hereinabove set forth.

24. NOTICES.

Any notice, consent, approval, request, bill, demand or statement hereunder (each, a "**Notice**") by either party to the other party shall be in writing and shall be deemed to have been duly given when either delivered by hand or by nationally recognized overnight courier (in either case with evidence of delivery or refusal thereof) addressed as follows:

If to Landlord:	The University of Texas M. D. Anderson Cancer Center Attention: Program Director of Real Estate Real Estate P.O. Box 301439 FHB – Unit 717 Houston, Texas 77230-1439
With a copy to:	The University of Texas System 210 West 7th Street Austin, Texas 78701 Attention: Executive Director of Real Estate
if to Tenant:	Ziopharm Oncology, Inc. One First Avenue Parris Building #34, Navy Yard Plaza Boston, MA 02129 Attention: Lynn Ferrucci
With a copy to:	Goulston & Storrs PC 400 Atlantic Avenue Boston, MA 02110 Attention: Jonathan N. Nichols, Esq.

Notwithstanding the foregoing, any notice from Landlord to Tenant regarding ordinary business operations (i.e., ministerial notices with no legal force and effect, such as notices related to Building events, exercise of rights of access, planned maintenance activities etc.) may instead be given pursuant to a mutually agreeable written protocol (which may include written notice delivered by facsimile or by hand to the attention of Tenant's facilities manager (or such other person designated by Tenant) at the Premises (and without copies as specified above). Either party may at any time change the address or specify an additional address for such Notices by delivering or mailing, as aforesaid, to the other party a notice stating the change and setting forth the changed or additional address, provided such changed or additional address is within the United States. Notices shall be effective upon the date of receipt or refusal thereof and may be given by attorneys for the parties.

25. GENERATOR.

Tenant may elect, at its sole cost and expense, to maintain, construct and install emergency back-up electrical generators and/or uninterruptible power supply systems (each, a "**Back-Up Generator**") in the Generator Premises set forth on Exhibit 1B attached hereto. Said Back-Up Generator shall be subject to the reasonable rules and guidelines adopted from time to time by Landlord with respect thereto, and to all applicable Legal Requirements. Any and all work and improvements to be performed by Tenant to construct and install said Back-Up Generator (such as installing conduits and connections from the Back-Up Generator to the Premises) (collectively, "**Generator Equipment**") shall be considered to be an Alteration and shall be subject to Landlord's review and prior written approval, if applicable, in accordance with the terms of this Lease. The Generator Premises will be provided on an "as is," "where is" basis, and, except as expressly set forth in this Lease, Landlord has made no representations or warranties, of any kind, with respect thereto. At Landlord's election, following the expiration or earlier termination of the Term, Tenant shall, at Tenant's expense, remove the Back-Up Generator and/or Generator Equipment and repair and restore, in a good and workmanlike manner, any damage to the Property arising out of or resulting from such removal, including, without limitation, by the closing of any slab penetrations.

26. MISCELLANEOUS

26.1 Separability. If any provision of this Lease or portion of such provision or the application thereof to any person or circumstance is for any reason held invalid or unenforceable, the remainder of this Lease (or the remainder of such provision) and the application thereof to other persons or circumstances shall not be affected thereby.

26.2 Captions. The captions are inserted only as a matter of convenience and for reference, and in no way define, limit or describe the scope of this Lease nor the intent of any provisions thereof.

26.3 Broker. Tenant warrants and represents that it has dealt with no broker in connection with the consummation of this Lease. Tenant agrees to defend, indemnify, and hold Landlord harmless from and against any Claims arising in breach of the representation and warranty set forth in the immediately preceding sentence. Landlord warrants and represents that it has dealt with no broker in connection with the consummation of this Lease.

26.4 Entire Agreement. Except as expressly set forth herein, this Lease, Lease Summary Sheet and the Exhibits attached hereto and incorporated herein contain the entire and only agreement between the parties and any and all statements and representations, written and oral, including previous correspondence and agreements between the parties hereto with respect to the terms of this Lease, are merged herein. Tenant acknowledges that all representations and statements upon which it relied in executing this Lease are contained herein and that Tenant in no way relied upon any other statements or representations, written or oral. This Lease may not be modified orally or in any manner other than by written agreement signed by the parties hereto.

26.5 Governing Law. This Lease is made pursuant to, and shall be governed by, and construed in accordance with, the laws of the State of Texas without reference to its conflicts of law provisions.

26.6 Representation of Authority. By his or her execution hereof, Landlord and Tenant each hereby warrants and represents to the other that the signatories on behalf of the respective parties are duly authorized to execute this Lease on behalf of such party.

26.7 Expenses Incurred by Landlord Upon Tenant Requests. Tenant shall, upon demand, reimburse Landlord for all reasonable third party costs incurred by Landlord in connection with requests by Tenant for consents to any Alterations or Transfers (excepting only Transfers pursuant to Section 13.4), in each case within thirty (30) days following Landlord's invoice; provided, however, any such fees shall not exceed $2,500 in the aggregate with respect to each Transfer or Alteration.

26.8 Survival. All obligations and liabilities of Landlord or Tenant to the other which accrued before the expiration or other termination of this Lease, and all such obligations and liabilities which by their nature or under the circumstances can only be, or by the provisions of this Lease may be, performed after such expiration or other termination, shall survive the expiration or other termination of this Lease. Without limiting the generality of the foregoing, the rights and obligations of the parties with respect to any indemnity under this Lease, and with respect to any Rent and any other amounts payable under this Lease, shall survive the expiration or other termination of this Lease.

26.9 Limitation of Liability. Landlord and Tenant specifically agree that in no event shall (a) any officer, director, trustee, employee or representative of Landlord or of any of the other Landlord Parties ever be personally liable for any obligation under this Lease, (b) Landlord or any of the other Landlord Parties be liable for consequential, incidental or punitive damages or for lost profits whatsoever in connection with this Lease, (c) any officer, director, trustee, employee or representative of Tenant or of any of the other Tenant Parties ever be personally liable for any obligation under this Lease, and (d) except as may be expressly provided pursuant to Section 21.3 above, Tenant or any of the other Tenant Parties be liable for consequential, incidental or punitive damages or for lost profits whatsoever in connection with this Lease.

26.10 Binding Effect. The covenants, agreements, terms, provisions and conditions of this Lease shall bind and benefit the successors and assigns of the parties hereto with the same effect as if mentioned in each instance where a party hereto is named or referred to, except that no violation of the provisions of Section 13 hereof shall operate to vest any rights in any successor or assignee of Tenant.

26.11 Landlord Obligations upon Transfer. Except as expressly set forth herein (including, without limitation, in Sections 5.1(b) and 11.4, and in Exhibit 3), upon any sale, transfer or other disposition of the Building, Landlord shall be entirely freed and relieved from the performance and observance accruing thereafter of all covenants and obligations hereunder on the part of Landlord to be performed and observed to the extent the Landlord's successor assumes the same, it being understood and agreed in such event (and it shall be deemed and construed as a covenant running with the land) that the person succeeding to Landlord's ownership of said reversionary interest shall thereupon and thereafter assume, and perform and observe, any and all of such covenants and obligations of Landlord.

26.12 Confidentiality.

(a) In connection with this Lease, from time to time Tenant has delivered and/or will deliver to Landlord, and the Landlord Parties may observe or have the opportunity to review, certain information about Tenant and/or its affiliates, including but not limited to financial information, trade secrets, information related to research and development, and other information related to the business operations of Tenant and/or its affiliates (such information whether furnished, observed, or reviewed before or after the Execution Date, whether oral, written, or visual, and regardless of the manner in which it is furnished, observed or reviewed, is collectively hereinafter referred to as "**Tenant's Proprietary Information**"). Tenant's Proprietary Information does not include, however, information which (1) is or becomes generally available to the public other than as a result of a disclosure in violation of this Section 26.12 by Landlord or Landlord's Engaged Persons; (2) was available to Landlord on a non-confidential basis prior to its disclosure by Tenant; or (3) becomes available to Landlord on a non-confidential basis from a person other than Tenant who is not to the knowledge of Landlord or Landlord's Engaged Persons otherwise bound by a confidentiality agreement with Tenant, or is otherwise not under an obligation to Tenant not to transmit the information to Landlord.

(b) Landlord hereby covenants and agrees (A) to keep all Tenant's Proprietary Information confidential; (B) not to disclose or reveal any Tenant's Proprietary Information to any person other than those persons, including its affiliates' employees, agents and representatives, whose duties and responsibilities reasonably require that Tenant's Proprietary Information be disclosed to them in connection with the ownership, financing, and/or sale of any of Landlord's interest in and to the Property or any portion thereof including the Premises (such persons are hereinafter referred to as "**Landlord's Engaged Persons**"); (C) to cause Landlord's Engaged Persons to observe the terms of this Section 26.12; and (D) except as expressly permitted by separate written agreement signed by Tenant, not to use any Tenant's Proprietary Information for any purpose other than in connection with the ownership, financing, and/or sale of any of Landlord's interest in and to the Property or any portion thereof including the Premises.

(c) In the event that Landlord is requested pursuant to, or required by, the Texas Public Information Act, applicable law or regulation or by legal process to disclose any Tenant's Proprietary Information, Landlord agrees that it will provide Tenant with reasonable notice of such request or requirement in order to enable Tenant to seek an appropriate protective order or other remedy, to resist or narrow the scope of such request or legal process, or to waive compliance, in whole or in part, with the terms of this Section 26.12. In any such event Landlord will use reasonable efforts under the circumstances in which disclosure is sought to ensure that all Tenant's Proprietary Information will be accorded confidential treatment by the entity compelling such disclosure and Tenant shall respond in such a time and manner that does not put Landlord or any of its Engaged Persons at risk of violation of such law or regulation or legal process.

(d) Without prejudice to the rights and remedies otherwise available at law or in equity, Landlord agrees that Tenant shall be entitled to seek equitable relief by way of injunction or otherwise if Landlord or any of Landlord's Engaged Persons breach or threaten to breach any of the provisions of this Section 26.12.

(e) Landlord will be responsible for any breach of the terms of this Section 26.12 by it and/or Landlord's Engaged Persons.

(f) No failure or delay in exercising any right, power or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any right, power or privilege hereunder.

(g) The obligations of the parties under this Section 26.12 shall survive the expiration or prior termination of the Term.

26.13 Use of Landlord's Name. Subject to the terms of this Section 26.13, Tenant will not state or imply that Landlord or MDACC endorses any of Tenant's products or services. Subject to the terms of this Section 26.13, all materials utilizing the name, trademarks, service marks, or symbols of Landlord or The University of Texas System for any purpose, including, but not limited to, the use in advertising, marketing, and sales promotion materials or any other materials or mediums (such as the internet, domain names, or URL addresses), must be submitted to Landlord's Brand Core team for prior written approval at the following email address: brandcoreteam@mdanderson.org or to such other person or contact as indicated by Landlord in writing. Landlord shall promptly respond to any such request for approval. Notwithstanding any provision of this Section 26.13 to the contrary, Tenant may, without obtaining Landlord's prior approval, utilize the name of Landlord and/or The University of Texas System to the extent (i) use is reasonably necessary to achieve the purposes of this Lease (including, without limitation, for purposes of obtaining licenses and/or permits); (ii) required by law or to comply with applicable governmental regulations or court order (including, without limitation, disclosure to the extent required by the Securities and Exchange Commission and/or any public stock exchange); or (iii) needed to enforce the terms of this Lease.

Nothing in this Section 26.13 shall amend, restrict, limit or modify in any way, the Existing R&D Agreement or the 2019 R&D Agreement or any other agreement executed by the parties hereto or any of their affiliates in connection therewith (each an "**Ancillary Agreement**"). In the event of any conflict or inconsistency between this Section 26.13 and any Ancillary Agreement, the terms of such Ancillary Agreement shall control.

26.14 Force Majeure. Other than for obligations under this Lease that can be performed by the payment of money (e.g., payment of Rent and maintenance of insurance), whenever a period of time is herein prescribed for action to be taken by either party hereto, such party shall not be liable or responsible for, and there shall be excluded from the computation of any such period of time, any delays due to strikes, riots, acts of God, shortages of labor or materials, war, acts of terrorism, national or regional emergency, or a pandemic, epidemic or other public health emergency or exigency, governmental laws, regulations, or restrictions, or any other causes of any kind whatsoever which are beyond the control of such party (collectively "**Force Majeure**"). In no event (i) shall financial inability of a party be deemed to be Force Majeure, and (ii) shall Force Majeure postpone or delay any of Tenant's remedies set forth in Section 3.2.

26.15 Counterparts; Electronic Signatures. This Lease may be executed in two or more counterparts, and by each or either of the parties in separate counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Delivery by fax or by electronic mail file attachment of any executed counterpart to this Lease will be deemed the equivalent of the delivery of the original executed instrument.

26.16 Texas State Agency Limitations. Landlord is the governing board of The University of Texas System, an agency of the State of Texas. As an agency of the State of Texas, it is subject to the Constitution and laws of the State of Texas and, under the Constitution and laws of the State of Texas, possesses certain rights and privileges, is subject to certain limitations and restrictions, and only has such authority as is granted under the Constitution and laws of the State of Texas. Notwithstanding any other provision to the contrary, nothing in this Agreement is intended to be, nor shall be construed to be, a waiver of the sovereign immunity of the State of Texas or a prospective waiver or restriction of any of the rights, remedies, claims and privileges of the State of Texas. Moreover, notwithstanding the generality or specificity of any provision of this Agreement, the provisions of this Agreement as they pertain to the Landlord are enforceable only to the extent authorized by the Constitution and laws of the State of Texas. No party to this Agreement will be required to perform any act or to refrain from any act that would violate any applicable laws, including the Constitution and laws of the State of Texas. Landlord represents and warrants to Tenant that as of the Execution Date, to the best of Landlord's knowledge and except as expressly set forth in this Lease (e.g., Section 6.5), Landlord is authorized by the Constitution and laws of the State of Texas to enter into and perform its obligations under this Lease.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF the parties hereto have executed this Lease as a sealed instrument as of the Execution Date.

LANDLORD

BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, for the use and benefit of The University of Texas M. D. Anderson Cancer Center

By: /s/ Ben Melson
Name: Ben Melson
Title: Senior Vice President and Chief Financial Officer

Approved as to Content:

THE UNIVERSITY OF TEXAS M. D. ANDERSON CANCER CENTER

By: /s/ Spencer Moore
Name: Spencer Moore
Title: Vice President and Chief Facilities Officer

Reviewed and Approved by UTMDACC Legal Services for UTMDACC Signature:

/s/ Chad Mavity 12/15/2020

TENANT

ZIOPHARM ONCOLOGY, INC.,
A Delaware limited liability company

By: /s/ Kevin Lafond
Name: Kevin Lafond
Title: Chief Accounting Officer

EXHIBIT 1A

LEASE PLAN – PRIME PREMISES

EXHIBIT 1B

LEASE PLAN – GENERATOR PREMISES

EXHIBIT 1C

LEASE PLAN – ROOFTOP PREMISES

EXHIBIT 1D

LEASE PLAN – GASSES/TANK PREMISES

EXHIBIT 2

DESCRIPTION/PLAN OF CAMPUS

The area commonly known as the El Rio Campus, being generally depicted on the plan below.

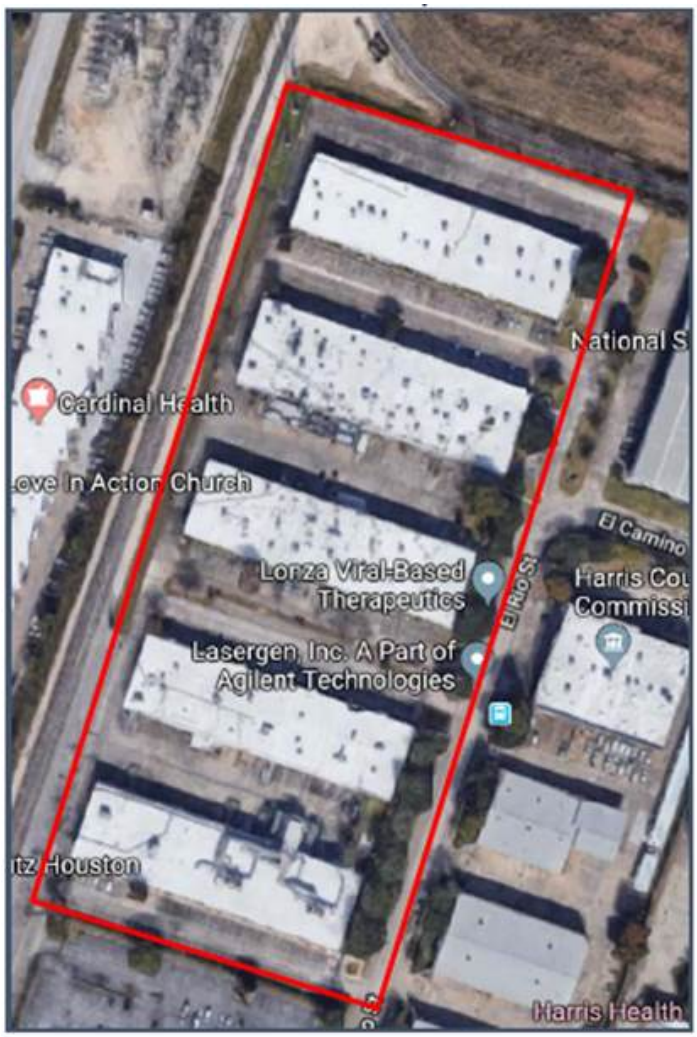

EXHIBIT 3

WORK LETTER

This Exhibit is attached to and made a part of the Lease (the "**Lease**") by and between the BOARD OF REGENTS OF THE UNIVERSITY OF TEXAS SYSTEM, acting for the use and benefit of The University of Texas M. D. Anderson Cancer Center, an institution of The University of Texas System ("**Landlord**"), and ZIOPHARM ONCOLOGY, INC., a Delaware corporation ("**Tenant**"), for space located at Building D of the El Rio Buildings, 8000 El Rio Street, Houston, Texas 77054. Capitalized terms used but not defined herein shall have the meanings given in the Lease.

This Work Letter shall set forth the obligations of Landlord and Tenant with respect to the improvements to be performed in preparing the Premises for Tenant's use. This Exhibit shall not be deemed applicable to any additional space added to the Premises at any time or from time to time, whether by any options under the Lease or otherwise, or to any portion of the original Premises or any additions to the Premises in the event of a renewal or extension of the original Term of the Lease, whether by any options under the Lease or otherwise, unless expressly so provided in the Lease or any amendment or supplement to the Lease.

I. Tenant's Work.

1. Tenant's Plans. Tenant anticipates making certain Alterations to the Premises to prepare the Premises for Tenant's occupancy and business operations, including without limitation, the installation of all furniture and fixtures (collectively, "**Tenant's Work**"). Landlord hereby approves of Tenant's Work, provided however, in the event Tenant's Work (a) is materially inconsistent with the overall usage of space (versus the configuration, finishes and materials, which may change without Landlord approval) depicted in the fit plan attached hereto as Exhibit 3-1 ("**Fit Plan of Tenant's Initial Work**"), and (b) requires Landlord's prior approval in accordance with the terms and conditions of Section 11.1(a) of this Lease, then Tenant shall submit to Landlord for approval a set of design/development plans sufficient for Landlord to approve Tenant's proposed design of the Premises (the "**Design/ Development Plans**"), and/or a full set of construction drawings ("**Final Construction Drawings**") for Tenant's Work. The Design/ Development Plans and the Final Construction Drawings are collectively referred to herein as the "**Plans**." In the event Landlord's prior approval is required hereunder, Landlord's approval of the Design/Development Plans and the Final Construction Drawings shall not be unreasonably withheld, conditioned or delayed, provided however, Landlord shall respond to any request for approval of Plans within the time periods set forth in Section 11.1 hereof, and Landlord's failure to timely respond to such request for approval shall be subject to the terms and conditions of Section 11.1 hereof with respect to the deemed approval thereof. Landlord's approval is solely given for the benefit of Landlord and Tenant under this Section and neither Tenant nor any third party shall have the right to rely upon Landlord's approval of the Plans for any other purpose whatsoever.

2. Performance of Tenant's Work. All Tenant's Work shall be performed by Tenant in accordance with the provisions of the Lease (including, without limitation, Section 11 and this Exhibit 3).

3. Cost of Tenant's Work; Priority of Work. All of Tenant's Work shall be performed at Tenant's sole cost and expense (subject to the terms of Section 4 below), and shall be performed in accordance with the provisions of this Lease (including, without limitation, Section 11).

4. Use of Remaining Funds. Subject to Section 5.1(b) of the Lease, Tenant shall be permitted to use any portion of the Remaining Funds towards costs incurred by Tenant in connection with Tenant's Work, including, without limitation, design, engineering and other so-called "soft costs", and costs of furniture, fixtures, equipment (including, without limitation, generators to serve the Premises) and telephone and data systems (collectively "**Tenant's Work Costs**"). Remaining Funds under the 2019 R&D Agreement shall be paid by Tenant, subject to and in accordance with the terms and conditions of the 2019 R&D Agreement and Section 5.1(b) of the Lease. With respect to Remaining Funds under the Existing R&D Agreement, Tenant may submit an application for Tenant's Work Costs (accompanied by invoices from Tenant's contractors, vendors, service providers and consultants (collectively, "**Contractors**") and listing in reasonable detail Tenant's Work Costs) for payment to Tenant or any of Tenant's Contractors. Tenant shall submit application(s) for each Contractor no more often than monthly, and Landlord shall pay such amounts within thirty (30) days following delivery of such application(s). Notwithstanding any provision of this Lease to the contrary, Landlord shall not be released from the obligations and liabilities set forth in this Section I and of Sections 5.1(b) and 11.4 of this Lease following any transfer of the Property by Landlord.

II. Miscellaneous

1. **Tenant's Authorized Representative**. Tenant designates Jim Winiarski (email: jwiniarski@ziopharm.com, telephone 978-835-7958; "**Tenant's Representative**") as the only person authorized to act for Tenant pursuant to this Work Letter. Landlord shall not be obligated to respond to or act upon any request, approval, inquiry or other communication ("**Communication**") from or on behalf of Tenant in connection with this Work Letter unless such Communication is in writing from Tenant's Representative. Tenant may change either Tenant's Representative at any time upon not less than five (5) Business Days advance written notice to Landlord.

2. **Landlord's Authorized Representative**. Landlord designates Mary Le Johnson (email: MLJohnson2@mdanderson.org, telephone 713-745-1938) ("**Landlord's Representative**") as the only person authorized to act for Landlord pursuant to this Work Letter. Tenant shall not be obligated to respond to or act upon any request, approval, inquiry or other Communication from or on behalf of Landlord in connection with this Work Letter unless such Communication is in writing from Landlord's Representative. A copy of any written Communication must also be sent to Bhargav Goswami (BGoswami@mdanderson.org, 713-563-0197). Landlord may change either Landlord's Representative at any time upon not less than five (5) Business Days advance written notice to Tenant.

EXHIBIT 3-1

FIT PLAN OF TENANT'S INITIAL WORK

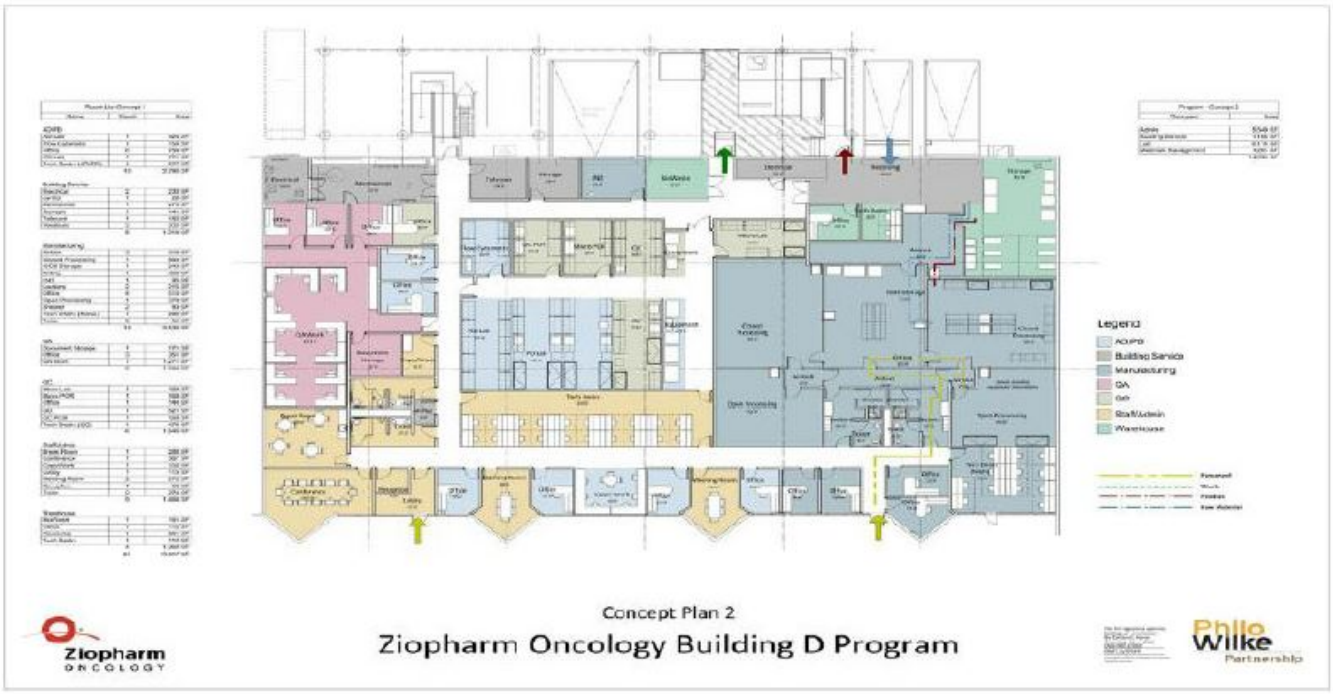

EXHIBIT 4

LANDLORD'S SERVICES

1. Electricity, hot and cold water and sewer service to the Premises
2. Electricity for Campus common areas, including exterior building lighting, if any
3. Maintenance and repair of the Property as described in Section 10.2
4. Exterior grounds and parking maintenance
5. Campus security systems and services
6. If applicable, maintenance of life safety systems (fire alarm and sprinkler), to the point they are stubbed to the Premises.
7. Such other services as Landlord reasonably determines are necessary or appropriate for the Property and Campus

EXHIBIT 5

INTENTIONALLY OMITTED

EXHIBIT 6

TENANT WORK INSURANCE SCHEDULE

Tenant shall, at its own expense, maintain and keep in force, or cause to be maintained and kept in force by any general contractors, sub-contractors or other third party entities where required by contract, throughout any period of alterations to the Premises or the Building by Tenant, the following insurance coverages:

(1) Property Insurance. "All-Risk" or "Special" Form property insurance, and/or Builders Risk coverage for major renovation projects, including, without limitation, coverage for fire, earthquake and flood; boiler and machinery (if applicable); sprinkler damage; vandalism; malicious mischief coverage on all equipment, furniture, fixtures, fittings, tenants work, improvements and betterments, business income, extra expense, merchandise, inventory/stock, contents, and personal property located on or in the Premises. Such insurance shall be in an amount equal to the full replacement cost of the aggregate of the foregoing and shall provide coverage comparable to the coverage in the standard ISO "All-Risk" or "Special" form, when such coverage is supplemented with the coverages required above. Property policy shall also include coverage for Plate Glass, where required by written contract.

Builders Risk insurance coverage may be provided by the general contractor on a blanket builders risk policy with limits adequate for the project, and evidencing the additional insureds as required in the Lease.

(2) Liability Insurance. General Liability, Umbrella/Excess Liability, Workers Compensation and Auto Liability coverage as follows:

(a) General Liability	$1,000,000 per occurrence $1,000,000 personal & advertising injury
(b) Products Liability	$2,000,000 products/completed operations aggregate

The General Contractor is required to maintain, during the construction period and up to 1 year after project completion, a General Liability insurance policy, covering bodily injury, personal injury, property damage, completed operations, with limits to include a $1,000,000 limit for blanket contractual liability coverage and adding Landlord as additional insured (including completed operations), primary & non-contributory, and waiver of subrogation as respects the project during construction and for completed operations up to 1 year after the end of the project. Landlord requires a copy of the ISO 20 10 11 85 Additional Insured endorsement, showing Landlord as an additional insured to the GC's policy.

(b) Auto Liability	$1,000,000 combined single limit each accident for bodily injury and property damage, hired and non-owned cover.

(c)	Workers Compensation Employers Liability	Statutory Limits $1,000,000 each accident* $1,000,000 each employee* $1,000,000 policy limit* * or such amounts as are customarily obtained by operators of comparable businesses

General Contractor shall ensure that any and all sub-contractors shall maintain equal limits of coverage for Workers Compensation/EL and collect insurance certificates verifying same.

(d)	Umbrella/Excess Liability	$5,000,000 per occurrence
(e)	Environmental Insurance	To the extent required by Landlord Contractors' commercial general liability/umbrella insurance policy(ies) shall include Landlord and Landlord's designees as additional insureds', and shall include a primary non-contributory provision. Liability policy shall contain a clause that the insurer may not cancel or materially change coverage without first giving Landlord thirty (30) days prior written notice, except cancellation for non-payment of premium, in which ten (10) days prior written notice shall be required.

(3) Deductibles. If any of the above insurances have deductibles or self-insured retentions, the Tenant and/or contractor (policy Named Insured) shall be responsible for the deductible amount.

All of the insurance policies required in this Exhibit 6 shall be written by insurance companies which are licensed to do business in the State where the property is located, or obtained through a duly authorized surplus lines insurance agent or otherwise in conformity with the laws of such state, with an A.M. Best rating of at least A and a financial size category of not less than VII. Tenant shall provide Landlord with certificates of insurance upon request, prior to commencement of the Tenant/contractor work, or within thirty (30) days of coverage inception and subsequent renewals or rewrites/replacements of any cancelled/non-renewed policies.

Subsidiaries of the Registrant.

ZIOPHARM Oncology, Ltd (United Kingdom)
ZIOPHARM Oncology, Ltd (Ireland)

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements (Nos. 333-129884, 333-134280, 333-142701, 333-160496, 333-167925, 333-185433, 333-199304, 333-220804, 333-228291, 333-238090 and 333-241698) on Form S-8 and Registration Statements (Nos. 333-134279, 333-141014, 333-161453, 333-162160, 333-163517, 333-166444, 333-174292, 333-177793, 333-201826, 333-229555 and 333-232283) on Form S-3 of ZIOPHARM Oncology, Inc. of our reports dated March 1, 2021 relating to the financial statements of ZIOPHARM Oncology, Inc. and subsidiaries and the effectiveness of internal control over financial reporting of Ziopharm Oncology, Inc. and subsidiaries appearing in this Annual Report on Form 10-K of ZIOPHARM Oncology, Inc. for the year ended December 31, 2020.

/s/ RSM US LLP

Boston, Massachusetts
March 1, 2021

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

I, Heidi Hagen, certify that:

1. I have reviewed this annual report on Form 10-K of ZIOPHARM Oncology, 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(s) 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(s) 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: March 1, 2021

/s/ Heidi Hagen
Heidi Hagen
Interim Chief Executive Officer
(Principal Executive Officer)

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

I, Timothy Cunningham, certify that:

1. I have reviewed this annual report on Form 10-K of ZIOPHARM Oncology, 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(s) 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(s) 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: March 1, 2021

/s/ Timothy Cunningham
Timothy Cunningham
Interim Chief Financial Officer
(Principal Financial Officer)

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of ZIOPHARM Oncology, Inc. (the "Company") on Form 10-K for the year ended December 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Heidi Hagen, Principal Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Heidi Hagen
Heidi Hagen
Interim Chief Executive Officer
(Principal Executive Officer)
March 1, 2021

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of ZIOPHARM Oncology, Inc. (the "Company") on Form 10-K for the year ended December 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Timothy Cunningham, Principal Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Timothy Cunningham
Timothy Cunningham
Interim Chief Financial Officer
(Principal Financial Officer)
March 1, 2021