UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2023

OR

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

For the transition period from to

Commission File Number 001-38841

Precision BioSciences, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**20-4206017**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
302 East Pettigrew St., Suite A-100 Durham, North Carolina	**27701**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (919) 314-5512

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.000005 per share	DTIL	The Nasdaq Capital Market

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

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

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

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

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

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. YES ☐ NO ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.1D-1(b). ☐

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 voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The Nasdaq Capital Market on June 30, 2023, was $59.1 million.

The number of shares of registrant's common stock outstanding as of March 21, 2024 was 6,916,239.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for its 2023 annual stockholders' meeting, which is to be filed within 120 days of the registrant's fiscal year ended December 31, 2023, are incorporated by reference into Part III of this Annual Report on Form 10-K.

Auditor Firm Id: 34 Auditor Name: Deloitte & Touche LLP Auditor Location: Raleigh, North Carolina

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FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. We intend such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements other than statements of present and historical facts contained in this Annual Report on Form 10-K, including, without limitation, statements regarding our future results of operations and financial position, business strategy and approach, including related results, prospective products, use and development of licensed products, planned preclinical studies and clinical trials, or discontinuance thereof, the status and results of our preclinical studies, expected release of interim data, expectations regarding the use and effects of ARCUS, including in connection with *in vivo* genome editing, collaborations and potential new partnerships or alternative opportunities for our product candidates, potential new application filings and regulatory approvals, research and development costs, timing, expected results and likelihood of success, as well as plans and objectives of management for future operations may be forward-looking statements. Without limiting the foregoing, in some cases, you can identify forward-looking statements by terms such as "aim," "may," "will," "should," "expect," "exploring," "plan," "anticipate," "could," "intend," "target," "project," "contemplate," "believe," "estimate," "predict," "potential," "seeks," or "continue" or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. No forward-looking statement is a guarantee of future results, performance, or achievements, and one should avoid placing undue reliance on such statements.

Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to us. Such beliefs and assumptions may or may not prove to be correct. Additionally, such forward-looking statements are subject to a number of known and unknown risks, uncertainties and assumptions, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various factors, including, but not limited to, those identified in Part I. Item 1A. "Risk Factors" and Part II. Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations." These risks and uncertainties include, but are not limited to:

- our ability to become profitable;
- our ability to procure sufficient funding to advance our programs;
- risks associated with raising additional capital and requirements under our current debt instruments and effects of restrictions thereunder;
- our operating expenses and our ability to predict what those expenses will be;
- our limited operating history;
- the success of our programs and product candidates in which we expend our resources;
- our limited ability or inability to assess the safety and efficacy of our product candidates;
- the risk that other genome-editing technologies may provide significant advantages over our ARCUS technology;
- our dependence on our ARCUS technology;
- the initiation, cost, timing, progress, achievement of milestones and results of research and development activities and preclinical and clinical studies;
- public perception about genome editing technology and its applications;
- competition in the genome editing, biopharmaceutical, and biotechnology fields;
- our or our collaborators' ability to identify, develop and commercialize product candidates;
- potential product liability lawsuits and penalties against us or our collaborators related to our technology and our product candidates;
- the U.S. and foreign regulatory landscape applicable to our and our collaborators' development of product candidates;

- our or our collaborators' or other licensees' ability to advance product candidates into, and successfully design, implement and complete, clinical or field trials;
- potential manufacturing problems associated with the development or commercialization of any of our product candidates;
- delays or difficulties in our or our collaborators' ability to enroll patients;
- changes in interim "top-line" and initial data that we announce or publish;
- if our product candidates do not work as intended or cause undesirable side effects;
- risks associated with applicable healthcare, data protection, privacy and security regulations and our compliance therewith;
- our ability to obtain orphan drug designation or fast track designation for our product candidates or to realize the expected benefits of these designations;
- our or our collaborators' ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations and/or warnings in the label of an approved product candidate;
- the rate and degree of market acceptance of any of our product candidates;
- our ability to effectively manage the growth of our operations;
- our ability to attract, retain, and motivate executives and personnel;
- effects of system failures and security breaches;
- insurance expenses and exposure to uninsured liabilities;
- effects of tax rules;
- effects of any pandemic, epidemic, or outbreak of an infectious disease;
- the success of our existing collaboration and other license agreements and our ability to enter into new collaboration arrangements;
- our current and future relationships with and reliance on third parties including suppliers and manufacturers;
- our ability to obtain and maintain intellectual property protection for our technology and any of our product candidates;
- potential litigation relating to infringement or misappropriation of intellectual property rights;
- effects of natural and manmade disasters, public health emergencies and other natural catastrophic events;
- effects of sustained inflation, supply chain disruptions and major central bank policy actions;
- market and economic conditions; and
- risks related to ownership of our common stock, including fluctuations in our stock price; and
- our ability to meet the requirements of and maintain listing of our common stock on Nasdaq or other public stock exchanges.

Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties.

You should read this Annual Report on Form 10-K and the documents that we reference herein completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of our forward-looking statements by these cautionary statements. All forward-looking statements contained herein speak only as of the date of this Annual Report on Form 10-K. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise.

As used in this Annual Report on Form 10-K, unless otherwise stated or the context requires otherwise, references to "Precision," the "Company," "we," "us," and "our," refer to Precision BioSciences, Inc.

RISK FACTOR SUMMARY

Our business is subject to numerous risks and uncertainties, including those described in Part I. Item 1A. "Risk Factors" in this Annual Report on Form 10-K. You should carefully consider these risks and uncertainties when investing in our common stock. Some of the principal risks and uncertainties include the following.

- *We have incurred significant operating losses since our inception and expect to continue to incur losses for the foreseeable future. We have not been profitable and may not achieve or maintain profitability.*
- *We will need substantial additional funding, and if we are unable to raise a sufficient amount of capital when needed on acceptable terms, or at all, we may be forced to delay, reduce or eliminate some or all of our research programs, product development activities and commercialization efforts.*
- *We have a limited operating history, which makes it difficult to evaluate our current business and future prospects and may increase the risk of your investment.*
- *ARCUS is a novel technology, making it difficult to predict the time, cost and potential success of product candidate development. We have not yet been able to assess the safety and efficacy of most of our product candidates in humans.*
- *We are heavily dependent on the successful development and translation of ARCUS, and due to the early stages of our product development operations, we cannot give any assurance that any product candidates will be successfully developed and commercialized.*
- *Adverse public perception of genome editing may negatively impact the developmental progress or commercial success of products that we develop alone or with collaborators.*
- *We face significant competition in industries experiencing rapid technological change, and there is a possibility that our competitors may achieve regulatory approval before us or develop product candidates or treatments that are safer or more effective than ours, which may harm our financial condition and our ability to successfully market or commercialize any of our product candidates.*
- *Our future profitability, if any, will depend in part on our ability and the ability of our collaborators to commercialize any products that we or our collaborators may develop in markets throughout the world. Commercialization of products in various markets could subject us to risks and uncertainties.*
- *Product liability lawsuits against us could cause us to incur substantial liabilities and could limit commercialization of any products that we develop alone or with collaborators.*
- *The regulatory landscape that will apply to development of therapeutic product candidates by us or our collaborators is rigorous, complex, uncertain and subject to change, which could result in delays or termination of development of such product candidates or unexpected costs in obtaining regulatory approvals.*
- *Clinical trials are difficult to design and implement, expensive, time-consuming and involve an uncertain outcome, and the inability to successfully and timely conduct clinical trials and obtain regulatory approval for our product candidates would substantially harm our business.*
- *Any product candidates that we or our collaborators or other licensees may develop will be novel and may be complex and difficult to manufacture, and if we experience manufacturing problems, it could result in delays in development and commercialization of such product candidates or otherwise harm our business.*
- *Even if we obtain regulatory approval for any products that we develop alone or with collaborators, such products will remain subject to ongoing regulatory requirements, which may result in significant additional expense.*
- *Even if any product we develop alone or with collaborators receives marketing approval, such product may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.*
- *Our future success depends on our key executives, as well as attracting, retaining and motivating qualified personnel.*
- *Our failure to meet the continued listing requirements of The Nasdaq Capital Market could result in a delisting of our common stock..*

PART I

Item 1. Business.

We are an advanced gene editing company utilizing our novel proprietary ARCUS platform to develop *in vivo* gene editing therapies for sophisticated gene edits, including gene elimination, insertion, and excision. ARCUS is the only gene editor derived purely from a protein, called a homing endonuclease, that evolved in nature to safely edit a genome and add function. ARCUS is particularly efficient at generating defined outcomes due to predominant repair using homology directed repair ("HDR") as opposed to non-homologous end joining ("NHEJ").

Overview of Genome Editing

DNA carries the genetic instructions for all basic functions of a living cell. These instructions are encoded in four different molecules, called bases, which are strung together in specific sequences to form genes. Each gene is responsible for a specific function in a cell, and the complete set of genes in a cell, which can consist of tens of thousands of genes and billions of individual bases, is known as a genome. The complete genome sequence has been determined for many organisms, including humans. This allows scientists to identify specific genes and determine how their unique sequences contribute to a particular cellular function. Studying variations in gene sequences further informs an understanding of why a cell behaves a certain way, which can greatly enhance understanding of what causes and how to treat aberrations that leads to disease.

Genome editing is a biotechnology process that removes, inserts or repairs a portion of DNA at a specific location in a cell's genome. Early applications of genome editing focused on advancing genetic research. As genome editing technologies have advanced, their application is moving beyond understanding disease to treating or preventing disease by editing DNA. Genome editing is accomplished by delivering a DNA cutting enzyme, called an endonuclease, to a targeted segment of genetic code.

There are several genome editing technologies, including ARCUS, zinc-finger nucleases ("ZFNs"), TAL-effector nucleases ("TALENs"), CRISPR-Cas, and base editors. These technologies differ from one another principally in the properties of the endonuclease that they each employ. The different endonucleases have fundamentally different mechanisms of recognizing and cutting their DNA targets, which gives each technology advantages and disadvantages depending on how each is used. In addition to the importance of efficiency, or the percentage of cells that are edited on-target, we believe ARCUS is differentiated by the type of edit predictably driving a more defined outcome. A defined outcome is a predictable, highly consistent, and intended therapeutic edit, as compared to a random outcome, a distribution of inconsistent edits which could potentially limit efficacy and the safety profile.

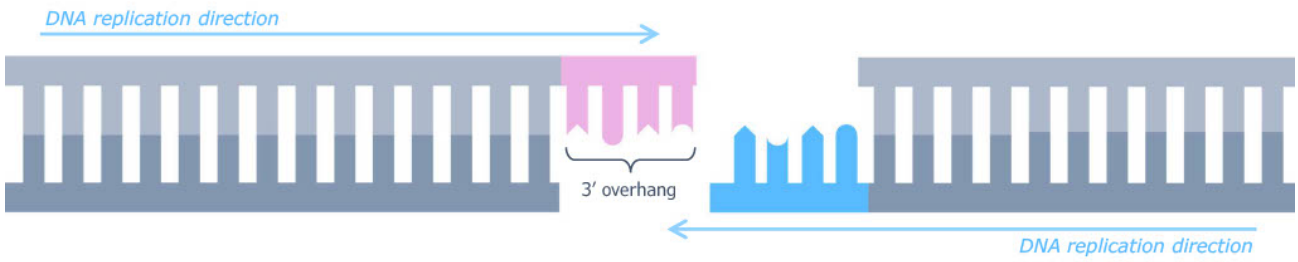
Our ARCUS Genome Editing Platform

ARCUS has three unique properties that can lead to defined outcomes:

The Cut. ARCUS has a unique cut that was evolved to drive defined outcomes. As shown in Figure 1 below, ARCUS generates a staggered cut that produces a 4 base pair, single strand of DNA. The portions noted in pink and blue are critical to finding a matching sequence on a DNA template when inserting a gene. These overhangs are also in the same direction as DNA replication, so once it finds the matching sequence, it can start DNA replication on the template and incorporate the intended edit into the genome. This process is known as HDR.

ARCUS also evolved for the pink and blue portions to match each other similar to puzzle pieces. If a DNA template is not inserted, no scar is made at the cut site. We can take advantage of this perfect re-ligation, or re-matching of the pieces, by making two cuts in the DNA strand so the overhangs match in an excision, a type of sophisticated edit.

Figure 1.



The Size. Size affects the ease and versatility with which endonucleases can be delivered to cells for editing. ARCUS can use different delivery vehicles including lipid nanoparticles ("LNP") for the liver and adeno-associated viruses ("AAV") to target diverse tissue types as it is very small relative to other genome editing endonucleases. ARCUS is also uniquely able to include an insertion DNA template in the same AAV because of its small size, which allows targeting *in vivo* gene insertion at tissues beyond the liver. ARCUS has demonstrated editing in a breadth of diverse tissue types, including the liver, muscle, the central nervous system, hematopoietic stem cells, and the eye.

The simplicity. ARCUS is the only single component editor. As a single protein with a DNA recognition motif and catalytic activity all in one, no guide RNA is required. Because editing outcomes are not dependent on simultaneous delivery of multiple editor components in separate delivery vehicles, ARCUS may lead to higher efficiency with potentially lower AAV and LNP doses.

Our Strategy

We are dedicated to improving life. Our goal is to broadly translate the potential of genome editing into permanent genetic solutions for significant unmet medical needs by leveraging the ARCUS gene editing platform in genetic and infectious diseases. In 2023 and early 2024, we refocused our pipeline on our core foundational strength as an *in vivo* gene editing company with the strategic divestment of our lead *ex vivo* allogeneic chimeric antigen receptor ("CAR") T candidate, azercabtagene zapreleucel ("azer-cel"). In 2024, our strategy is solely focused on progressing our gene editing portfolio, including programs under development internally and with partners, and differentiating ARCUS as a unique tool in the gene editing field.

***In vivo* Gene Editing Pipeline**

Wholly-Owned Programs

PBGENE-HBV (Elimination). We expect to submit an investigational new drug application ("IND") and/or clinical trial application ("CTA") in 2024 for our PBGENE-HBV program for the potential treatment of chronic hepatitis B virus ("HBV"). HBV causes inflammation and damage to the liver, leading to chronic infection and increased risk of death from liver cancer or cirrhosis. There is no cure for chronic hepatitis B, and current treatments rarely result in functional cure, primarily due to persistence of viral DNA in the liver. In patients with chronic HBV, genetic material of the virus is converted within infected liver cells into covalently closed circular DNA ("cccDNA") that acts as a template to make HBV copies. HBV also inserts its DNA into the human genome of infected liver cells. This integrated HBV DNA produces the viral protein, hepatitis B surface antigen ("HBsAg"), which is secreted in the blood. Presence of HBsAg is associated with poorer outcomes and elimination of HBsAg is necessary for functional cure of chronic HBV.

PBGENE-HBV is designed to eliminate cccDNA with direct cuts and edits as well as to inactivate integrated HBV DNA with the goal of long-lasting reductions in HBsAg. We believe specificity is of particular importance for developing a safe gene editing approach to eliminating HBV, as a lack of nuclease specificity can lead to unfavorable off-target results including increased integrations of HBV genomes into the human genome, as well as translocations between integrations. Preclinical data from the PBGENE-HBV program presented at scientific congresses in 2023 highlighted that ARCUS nucleases exhibited high levels of on-target editing and demonstrated substantial reductions of both intracellular cccDNA and secreted HBsAg with no detectable translocations in primary human hepatocytes.

PBGENE-PMM (Elimination). We are pursuing development of PBGENE-PMM as a potential first-in-class opportunity for treatment of m.3243 associated primary mitochondrial myopathy ("PMM"). Mitochondrial diseases are the most common hereditary metabolic disorder, affecting 1 in 4,300 people. PMM currently lacks a curative treatment and impacts approximately 50% of patients with mitochondrial disease. The high specificity and single component nature of our mitoARCUS nucleases are designed to enable specific editing of mutant mitochondrial DNA while allowing normal (wild-type) mitochondrial DNA to repopulate in the mitochondria and restore normal function. We expect to submit an IND and/or CTA in 2025.

Partnered Programs

PBGENE-NVS (Insertion). In connection with our exclusive *in vivo* gene editing research and development collaboration and license agreement (the "Novartis Agreement") with Novartis Pharma AG ("Novartis"), we are developing a custom ARCUS nuclease that will be designed to insert, *in vivo*, a therapeutic transgene at a "safe harbor" location in the genome as a potential one-time transformative treatment option for diseases including certain hemoglobinopathies such as sickle cell disease and beta thalassemia. Under the terms of the Novartis Agreement, we will develop an ARCUS nuclease and conduct *in vitro* characterization, with Novartis then assuming responsibility for all subsequent research, development, manufacturing and commercialization activities.

PBGENE-DMD (Excision), PBGENE-LL2 (Insertion) and PBGENE-LL3. We continue our *in vivo* gene editing collaboration with Prevail Therapeutics, Inc. ("Prevail"), a wholly-owned subsidiary of Eli Lilly and Company ("Lilly"), in applying ARCUS nucleases to three initial targets, including Duchenne muscular dystrophy ("DMD") in muscle, a liver directed target (PBGENE-LL2**)** and a central nervous system directed target (PBGENE-LL3**)**. ARCUS genome editing has previously been shown to increase expression of a shortened version of dystrophin in cultured myoblasts from a DMD patient. The approach uses two complementary ARCUS nucleases delivered by a single AAV to excise a large segment of the dystrophin gene that encodes exons 45 through 55 of dystrophin – a region of the gene that accounts for more than 50% of DMD-causing mutations. During our September 2023 Research and Development ("R&D") Day, we highlighted preclinical data demonstrating the potential of ARCUS *in vivo* gene editing for large gene excisions and that the edited dystrophin variant was observed in multiple tissue types frequently involved in progression of DMD, including skeletal muscle, heart, and diaphragm, thereby enabling significantly improved muscle function. Also during our R&D Day, we highlighted new data demonstrating that ARCUS is capable of high efficiency gene insertion in nondividing cells in adult nonhuman primates, the most challenging context for gene insertion. In the pre-clinical study involving coadministration of AAV and lipid nanoparticle, our scientists observed 40% to 45% overall gene insertion efficiency at 1- and 3-months. Our scientists largely attribute this high efficiency to the unique ARCUS cut type which drives homology directed repair, even in nondividing cells.

iECURE-OTC (Insertion). In partnership with iECURE, Inc. ("iECURE"), an ARCUS-mediated gene insertion approach is being pursued as a potential treatment option for neonatal onset ornithine transcarbamylase ("OTC") deficiency. Non-human primate ("NHP") data presented by researchers from the University of Pennsylvania's Gene Therapy Program demonstrated sustained gene insertion of a therapeutic OTC transgene one-year post-dosing in newborn and infant NHPs with high efficiency. iECURE received approval from the Australian Therapeutic Goods Administration for the initiation of a first-in-human Phase 1/2 trial evaluating ECUR-506, incorporating an ARCUS nuclease for the treatment of OTC deficiency in pediatric (or neonatal) patients. In March 2024, iECURE also received approval from the U.K. Medicines & Healthcare products Regulatory Agency for the company's CTA application to expand the Phase 1/2 OTC-HOPE study evaluating ECUR-506 into the U.K. iECURE is preparing sites and anticipates initiating the global clinical trial in the first half of 2024.

Our Team

We believe that our team, whom we call Precisioneers, has among the strongest scientific experience and capabilities of all genome editing companies. Our senior leaders bring extensive experience leading organizations focused on gene therapies, including our co-founder, who has been working with genome editing technology for over 20 years.

We have recruited our team of Precisioneers to include individuals with extensive industry experience and expertise in the discovery, development and manufacture of gene therapies. As of December 31, 2023, our team of Precisioneers included 29 full-time employees with Ph.D. or M.D. degrees.

License and Collaboration Agreements

Caribou Biosciences

In February 2024, we announced that we had granted Caribou Biosciences, Inc., ("Caribou") a leading CRISPR genome-editing cell therapy company, a non-exclusive, worldwide license, with the right to sublicense, to one of our foundational cell therapy patent families for use with CRISPR-based therapies in the field of human therapeutics. Under the terms of the agreement, we received an upfront payment and, upon commercialization by Caribou, will receive royalties on net sales of licensed products.

TG Therapeutics

On January 7, 2024, we entered into a license agreement (the "TG License Agreement") with TG Cell Therapy, Inc. ("TG Subsidiary") and its parent company TG Therapeutics, Inc. ("TG Parent" and, together with TG Subsidiary, "TG Therapeutics"), pursuant to which we granted TG Subsidiary certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize azer-cel for autoimmune diseases and other indications outside of cancer. Refer to Part II. Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Annual Report on Form 10-K for additional information related to the terms, duration, and effect of the TG License Agreement.

Sale of CAR T Platform to Imugene

On August 15, 2023 we entered into an asset purchase agreement (the "Imugene Purchase Agreement") with Imugene Limited, and its wholly-owned subsidiary Imugene (USA) Inc. ("Imugene US" and, together with Imugene Limited, "Imugene"). Pursuant to and simultaneously with the execution of the Imugene Purchase Agreement, on August 15, 2023 (the "Closing Date"), Imugene US acquired our manufacturing infrastructure used in the development and manufacture of azer-cel, including assuming the lease to our manufacturing facility and certain contracts with respect to our manufacturing facility, and related equipment, supplies, azer-cel clinical trial inventory and other assets related to our CAR T cell therapy platform. As part of the Imugene Purchase Agreement, Imugene US hired a number of our employees who were associated with our historical CAR T cell therapy operations.

Additionally, we entered into a license agreement with Imugene (the "Imugene License Agreement") on the Closing Date, pursuant to which we granted Imugene US certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize oncological applications of our allogeneic CAR T therapy, azer-cel, and up to three additional research product candidates directed to targets that Imugene US may nominate prior to the fifth anniversary of the effective date of the Imugene License Agreement, pursuant to the terms of the Imugene License Agreement. Refer to Part II. Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Annual Report on Form 10-K for additional information related to the terms, duration, and effect of the Imugene License Agreement.

Novartis Pharma AG

On June 14, 2022, we entered into the Novartis Agreement, which became effective on June 15, 2022 (the "Novartis Effective Date"), to collaborate to discover and develop *in vivo* gene editing products incorporating our custom ARCUS nucleases for the purpose of seeking to research and develop potential treatments for certain diseases collectively referred to as licensed products). Any initial licensed products under the Novartis Agreement will be developed for the potential treatment of certain hemoglobinopathies, including sickle cell disease and beta thalassemia.

Pursuant to the terms of the Novartis Agreement, we will develop an ARCUS nuclease and conduct *in vitro* characterization for the licensed products, with Novartis then assuming responsibility for all subsequent development, manufacturing and commercialization activities. Novartis will receive an exclusive license for, and be required to use commercially reasonable efforts to conduct all subsequent research, development, manufacture and commercialization activities with respect to the licensed products. We will initially develop a single, custom ARCUS nuclease for a defined "safe harbor" target site for insertion of specified therapeutic payloads in the patient's genome (the "Initial Nuclease") for Novartis to further develop as a potential *in vivo* treatment option for certain hemoglobinopathies, including sickle cell disease and beta thalassemia. Pursuant to the terms of the Novartis Agreement, Novartis may elect, subject to payment of a fee to us, to replace licensed products based on the Initial Nuclease with licensed products based on a second custom ARCUS nuclease we design for gene editing of a specified human gene target associated with hemoglobinopathies (the "Replacement Nuclease"). Additionally, Novartis has the option, upon payment of a fee to us for each exercise of the option, to include licensed products utilizing the Initial Nuclease for insertion of up to three additional specified therapeutic payloads at the "safe harbor" target site, each intended to treat a particular genetic disease. The exercise period for such option ends on the earlier of (a) the fourth anniversary of the Novartis Effective Date and (b) the replacement of the Initial Nuclease with the Replacement Nuclease as described above. Refer to Part II. Item 7. "Management's Discussion and Analysis of Financial

Condition and Results of Operations" of this Annual Report on Form 10-K for additional information related to the terms, duration, and effect of the Novartis Agreement.

Prevail Therapeutics, Inc.

On November 19, 2020, we entered into a development and license agreement with Lilly to collaborate to discover and develop *in vivo* gene editing products incorporating our ARCUS nucleases to utilize ARCUS for the research and development of potential *in vivo* therapies for genetic disorders (the "Original Prevail Agreement"). This agreement was subsequently assigned to Prevail, effective November 1, 2022.

On June 30, 2023, we entered into a license agreement (the "Prevail Agreement") with Prevail, which amended and restated the Original Prevail Agreement. Pursuant to the terms of the Prevail Agreement, we and Prevail will continue to collaborate on developing our ARCUS nucleases for the research and development of potential *in vivo* therapies for genetic disorders, including DMD, a liver-directed target, and a central nervous system directed target. Prevail also continues to have the right to nominate up to three additional gene targets for genetic disorders over the initial nomination period of four years. Prevail may extend the nomination period for an additional two years from the date on which such initial nomination period ends, upon Prevail's election and payment of an extension fee. Additionally, Prevail has the option to replace up to two gene targets upon Prevail's election and payment of a replacement target fee.

Prevail will oversee and fund preclinical research and IND-enabling activities following creation, selection, *in vitro* development, and optimization of ARCUS nucleases with respect to the gene targets subject to the collaboration, which were previously conducted by us at our expense. Manufacturing initial clinical trial material for the first licensed product, which was previously our responsibility to conduct at Prevail's expense, will instead be Prevail's responsibility at Prevail's expense. Prevail will continue to be responsible for, and must use commercially reasonable efforts with respect to, conducting clinical development and commercialization activities for licensed products resulting from the collaboration. Refer to Part II. Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Annual Report on Form 10-K for additional information related to the terms, duration, and effect of the Prevail Agreement.

iECURE

In August 2021, we entered into a development and license agreement with iECURE (the "iECURE DLA") under which iECURE was to advance our PBGENE-PCSK9 candidate for familial hypercholesterolemia ("FH") through preclinical activities as well as a Phase 1 clinical trial in order to gain access to a license to our PCSK9-directed ARCUS nuclease to develop gene-insertion therapies for four other rare genetic diseases, including OTC deficiency, Citrullinemia Type 1, Phenylketonuria, and another program focused on liver disease (the "PCSK9 License"). In 2022 we made the decision to cease pursuit of PBGENE-PCSK9 for FH with iECURE as our partner. PGENE-PCSK9 for FH remains wholly-owned by us.

Simultaneously with the entry into the iECURE DLA, we entered into an Equity Issuance Agreement with iECURE (the "iECURE Equity Agreement"), pursuant to which iECURE issued us common stock in iECURE as additional consideration for the license to use our PCSK9-directed ARCUS nuclease.

In December 2023, iECURE announced that the Australian Therapeutic Goods Administration had approved its Clinical Trial Notification for ECUR-506, an investigational therapy incorporating an ARCUS nuclease in development for the treatment of OTC deficiency in pediatric (or neonatal) patients. In March 2024, iECURE announced that the U.K. Medicines & Healthcare products Regulatory Agency had approved its Clinical Trial Authorisation application to expand the OTC-HOPE study into the U.K. iECURE plans to initiate its global first-in-human Phase 1/2 clinical study of ECUR-506 in the first half of 2024.

Duke University

In April 2006, we entered into the Duke License, pursuant to which Duke University ("Duke") granted us an exclusive (subject to certain non-commercial rights reserved by Duke), sublicensable, worldwide license under certain patents related to certain meganucleases and methods of making such meganucleases owned by Duke to develop, manufacture, use and commercialize products and processes that are covered by such patents, in all fields and in all applications. The patents that we license pursuant to the Duke License have been generated through the use of U.S. government funding and are therefore subject to certain federal regulations. See Part I. Item 1A. *"Risk Factors— Risks Related to Intellectual Property— Some of our in-licensed intellectual property has been discovered through government funded research and thus may be subject to federal regulations such as "march-in" rights, certain reporting requirements and a preference for U.S.-based companies, and compliance with such regulations may limit our exclusive rights and our ability to contract with foreign manufacturers."*

Under the Duke License, in addition to upfront licensing fees, we are also required to pay Duke (1) a total of $0.3 million in milestone payments, a portion of which we paid upon the completion of our Series A financing, a further portion of which we paid upon our first

signed partnership in excess of $1 million, and the remainder of which we will be required to pay upon successful commercialization of human therapeutics, (2) royalties in the low single digit percentages on net sales of licensed products and licensed processes sold by us and our affiliates, subject to certain reductions in certain circumstances, with certain annual minimum royalties, and (3) certain percentages of sublicensing revenue received under sublicenses granted to third parties, which are creditable against annual minimum royalties and are subject to certain reductions in certain circumstances. For sublicenses of non-commercial products, the percentage of sublicensing revenue payable to Duke is in the mid-teen percentages for sublicense revenues owed from royalties received and low double-digits for sublicense revenues owed from non-royalty payments. For sublicenses of commercial products created by us and derivatives thereof, the percentage is determined by the highest negotiated royalty rate in such sublicense. If the highest negotiated royalty rate between us and our sublicensee exceeds a mid-single digit percentage, the percentage of sublicensing revenue payable to Duke will be high single digit, decreasing to low single digit as the highest negotiated royalty rate in such sublicense increases.

The Duke License will expire upon the expiration of the last-to-expire patent that is licensed to us. We may terminate the Duke License by providing advance written notice as specified in the Duke License. Either party may terminate the Duke License in the event of the other party's uncured material breach or for the other party's fraud, willful misconduct or illegal conduct with respect to the subject matter of the Duke License.

Cellectis S.A.

In January 2014, we entered into a cross-license agreement with Cellectis S.A., which we refer to as the Cellectis License, in connection with a settlement of litigation matters (1) between Cellectis and us and (2) among Cellectis, Duke and us. Cellectis granted us a non-exclusive, sublicensable, worldwide, fully paid, royalty-free license to certain modified I-CreI homing endonuclease patents and Cellectis patents asserted in the litigation, to make, use and commercialize modified I-CreI homing nucleases and products developed using such nucleases, in all fields. The license we received from Cellectis is subject to the rights of a preexisting license agreement that Cellectis entered into with a third party, and the license granted to us excludes any rights exclusively granted by Cellectis under such preexisting license, which preexisting license is limited to certain specific applications unrelated to the fields of human therapeutics, for so long as the rights under the preexisting license remain exclusive.

We granted Cellectis a non-exclusive, sublicensable, worldwide, fully paid-up, royalty-free license to certain modified I CreI homing endonuclease patents and our patents asserted in the litigation matters (1) between Cellectis and us and (2) among Cellectis, Duke and us to make, use and commercialize modified I-CreI homing nucleases and products developing using such nucleases, in all fields except those for which we did not receive rights from Cellectis due to the preexisting license.

The Cellectis License will expire upon the expiration of the last-to-expire valid claim of all of the patents licensed to or from each of the parties to the agreement. Either party may terminate any of the licenses granted under the agreement (1) in the event of the other party's material breach, subject to an opportunity to cure within the time period specified in the Cellectis License, or (2) if the other party directly or indirectly challenges a patent licensed to it by the other party.

Competition

As a diversified life sciences company, we compete in multiple different fields. The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on intellectual property and proprietary products. We principally compete with others developing and utilizing genome and epigenomic editing technology in the human health sector, including companies such as Beam Therapeutics, Inc., CRISPR Therapeutics, AG, Editas Medicine, Inc., Intellia Therapeutics, Inc., Prime Medicine, Inc., Tune Therapeutics, Inc. and Verve Therapeutics, Inc.

We compete with many biotechnology and pharmaceutical companies, academic research institutions, governmental agencies and public and private research institutions. We expect that our operations focused on developing products for *in vivo* treatment of genetic disease will face substantial competition from others focusing on gene therapy treatments, especially those that may focus on conditions that our product candidates target. Moreover, any human therapeutics products that we may develop will compete with existing standards of care for the diseases and conditions that our product candidates target and other types of treatments, such as small molecule, antibody or protein therapies.

Many of our current or potential competitors in the therapeutics space, either alone or with their collaboration partners, have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials and marketing approved products than we do. In addition to competing on the bases of safety, efficacy, timing of development and commercialization, convenience, cost, availability of reimbursement and rate of adoption of potential product candidates, we may also compete with these competitors in recruiting and retaining qualified personnel, establishing clinical sites, establishing relationships with collaborators or other third parties, registering patients for clinical trials and acquiring technologies complementary to, or necessary for, our product development platforms. Our commercial opportunity could be reduced or eliminated

if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market.

Furthermore, we rely upon a combination of patents and trade secret protection, as well as license and confidentiality agreements to protect the intellectual property related to our proprietary technologies, product candidate development programs and product candidates. Our success depends in large part on our ability to secure and maintain patent protection in the United States and other countries with respect to the ARCUS nucleases used in our *in vivo* gene editing programs, as well as any future product candidates. Moreover, the industries in which we operate are characterized by the existence of large numbers of patents and frequent allegations of patent infringement. If, therefore, we are unable to obtain and maintain patent protection for our technology and product candidates, or if the scope of the patent protection obtained or in-licensed is not sufficiently broad or if the validity of such patent protection is threatened, we may not be able to compete effectively, as it could create opportunities for competitors to enter the market or dissuade other companies from collaborating with us to develop products and technology, any of which would hurt our competitive position and could impair our ability to successfully commercialize our product candidates in any indication for which they are approved.

Intellectual property

Our success depends in part on our abilities to (1) obtain and maintain proprietary protection for ARCUS, (2) defend and enforce our intellectual property rights, in particular, our patent rights, (3) preserve the confidentiality of our know-how and trade secrets, and (4) operate without infringing valid and enforceable intellectual property rights of others. We seek to protect our proprietary position by, among other things, exclusively licensing U.S. and certain foreign patent applications, and filing U.S. and certain foreign patent applications related to ARCUS, existing and planned programs, and improvements that are important to the development of our business. We also rely on trademarks, trade secrets, know-how, continuing technological innovation and confidential information, and the pursuit of licensing opportunities, to develop and maintain our proprietary position and protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection. We seek to protect our proprietary technology and processes, in part, by confidentiality agreements and invention assignment agreements with our employees, consultants, scientific advisors, contractors and others who may have access to proprietary information, under which they are bound to assign to us inventions made during the term of their employment or term of service. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of our information technology systems.

We cannot be sure that patents will be granted with respect to any patent applications we have licensed or filed or may license or file in the future, and we cannot be sure that any patents we have licensed or which have been granted to us, or patents that may be licensed or granted to us in the future, will not be challenged, invalidated or circumvented or that such patents will be commercially useful in protecting our technology. Moreover, trade secrets can be difficult to protect. While we have confidence in the measures we take to protect and preserve our trade secrets, such measures can be breached, and we may not have adequate remedies for any such breach. In addition, our trade secrets may otherwise become known or be independently discovered by competitors. For more information regarding the risks related to our intellectual property, see Part I. Item 1A. "*Risk Factors—Risks Related to Intellectual Property.*"

Our patent portfolio consists of a combination of issued patents and pending patent applications that are owned by us or licensed by us from third parties. As of December 31, 2023, we have an exclusive license from Duke under 12 issued U.S. patents and two pending U.S. patent applications. In addition, as of December 31, 2023, we own 42 issued U.S. patents, 46 pending non-provisional U.S. patent applications, and 10 pending Patent Cooperation Treaty ("PCT") international patent applications. We also exclusively license from Duke or own many corresponding patents and patent applications outside the United States, as described below. We intend to pursue, when possible, additional patent protection, including composition of matter, method of use and process claims, related to ARCUS. We also intend to obtain rights to existing delivery technologies through one or more licenses from third parties.

ARCUS Platform Patent Families

We license one patent family from Duke and own three patent families that are directed to the core technologies employed in our ARCUS platform for nuclease design. Thus, each of our product candidates is protected by one or more patents in these families.

The first family, licensed from Duke, includes 12 issued patents in the United States, nine issued patents in Europe, three issued patents in Japan, and one issued patent in each of Australia and Canada. This family also includes pending patent applications in each of the United States, Europe, Canada, and Japan. Patents in this family include claims directed to (1) recombinant meganucleases having altered cleavage specificity, altered heterodimer formation, and/or altered DNA binding affinity, (2) methods for cleaving

target recognition sites in DNA using such meganucleases, and (3) methods for producing genetically modified eukaryotic cells using such meganucleases. Patents in this family will have a standard expiration date of October 18, 2026, subject to potential extensions.

The second family, which we own, includes four issued patents in the United States, three issued patents in Europe, two issued patents in Japan, and one issued patent in Australia. This family also includes pending patent applications in each of the United States, Europe, Australia, and Japan. Patents in this family include claims directed to (1) recombinant single-chain meganucleases, and (2) methods for producing isolated genetically modified eukaryotic cells using such meganucleases. Patents in this family will have a standard expiration date of October 31, 2028, subject to potential extensions.

The third family, which we own, includes three issued patents in the United States, and two issued patents in each of Europe and Australia. This family also includes pending patent applications in each of the United States and Europe. Patents in this family include claims directed to methods of cleaving DNA at specific four base pair sites using a recombinant meganuclease. Patents in this family will have a standard expiration date of July 14, 2029, subject to potential extensions.

The fourth family, which we own, includes pending patent applications in each of the United States, Europe, Hong Kong, Australia, Canada, China, Israel, Japan, Mexico, and South Korea. Patent applications in this family include claims directed to recombinant meganucleases engineered to cleave recognition sequences having specific four base pair sites. Patents in this family, if issued, will have a standard expiration date of May 7, 2040, subject to potential extensions.

In Vivo Gene Editing Patent Families

We own 28 patent families, including three jointly-owned patent families, that are directed to our *in vivo* gene editing technologies. Each of our *in vivo* gene editing product candidates is protected or disclosed by one or more of these patent families.

The first family includes three issued patents in the United States, two issued patents in Japan, one issued patent in each of Europe, Eurasia, South Korea, and Hong Kong, and pending patent applications in each of the United States, Europe, Australia, Canada, China, Eurasia, Guatemala, Hong Kong, Israel, Japan, South Korea, Mexico, Morocco, the Philippines, Saudi Arabia, and Thailand. Patents in this family include claims directed to (1) first-generation engineered meganucleases that cleave a recognition sequence within the genome of the Hepatitis B virus, (2) nucleic acids encoding such engineered meganucleases, (3) viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, viral vectors, and lipid nanoparticle compositions, and (6) methods for treating patients having HBV by administration of such engineered meganucleases or nucleic acids encoding such engineered meganucleases. Patents in this family have a standard expiration date of October 13, 2037, subject to potential extensions.

The second family includes two issued patents in the United States, and pending patent applications in each of the United States and Europe. Patents in this family include claims directed to (1) second-generation engineered meganucleases that cleave a recognition sequence within the genome of the Hepatitis B virus, (2) nucleic acids encoding such engineered meganucleases, (3) viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, viral vectors, and lipid nanoparticle compositions and, (6) methods for treating patients having HBV by administration of such engineered meganucleases or nucleic acids encoding such engineered meganucleases. Patents in this family will have a standard expiration date of April 11, 2039, or April 12, 2039, subject to potential extensions.

The third family includes pending patent applications in each of the United States, Europe, China, Hong Kong, and New Zealand. Patents in this family include claims directed to (1) third-generation engineered meganucleases that cleave a recognition sequence within the genome of the Hepatitis B virus, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viruses comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, recombinant viruses, and lipid nanoparticle compositions and, (6) methods for treating patients having HBV by administration of such engineered meganucleases or nucleic acids encoding such engineered meganucleases. Patents in this family, if issued, will have a standard expiration date of December 4, 2040, subject to potential extensions.

The fourth family, which we jointly own, includes a pending PCT international patent application, and pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patents in this family include claims directed to (1) mitochondrial-targeting engineered meganucleases (MTEM)s that cleave recognition sequences within the mitochondrial genome of a eukaryotic cell, (2) nucleic acids encoding such MTEMs, (3) recombinant viruses comprising nucleic acids encoding such MTEMs, (4) lipid nanoparticle compositions comprising nucleic acids encoding such MTEMs, (5) pharmaceutical compositions comprising such MTEMs, nucleic acids, recombinant viruses, and lipid nanoparticle compositions, (6) genetically modified eukaryotic cells comprising nucleic acids encoding such MTEMs, (7) methods of producing genetically modified eukaryotic cells and populations of genetically

modified eukaryotic cells by delivering such MTEMs, (8) methods for degrading mutant mitochondrial genomes in target cells or populations of target cells by delivery of such recombinant meganucleases, and (9) methods for treating conditions associated with mitochondrial disorders by administration of such MTEMs. Patents in this family, if issued, will have a standard expiration date of April 22, 2042.

The fifth family, which we jointly own, includes a pending PCT international patent application, two pending patent applications in the United States, and pending patent applications in each of Europe, Australia, Canada, China, Israel, Japan, Mexico, and South Korea. Patents in this family include claims directed to (1) mitochondrial-targeting engineered meganucleases (MTEM)s that cleave a recognition sequence within the mitochondrial genome of a eukaryotic cell, (2) nucleic acids encoding such MTEMs, (3) recombinant viruses comprising nucleic acids encoding such MTEMs, (4) lipid nanoparticle compositions comprising nucleic acids encoding such MTEMs, (5) pharmaceutical compositions comprising such MTEMs, nucleic acids, recombinant viruses, and lipid nanoparticle compositions, (6) genetically modified eukaryotic cells comprising nucleic acids encoding such MTEMs, (7) methods of producing genetically modified eukaryotic cells and populations of genetically modified eukaryotic cells with such MTEMs, (8) methods for degrading mutant mitochondrial genomes in target cells or populations of target cells by delivery of such recombinant meganucleases, and (9) methods for treating conditions associated with mitochondrial disorders by administration of such MTEMs. Patents in this family, if issued, will have a standard expiration date of April 22, 2042, subject to potential extensions.

The sixth family includes one issued patent in each of Europe and Japan, and pending patent applications in each of the United States, Europe, Australia, Canada, Hong Kong, and Japan. Patents in this family include claims directed to (1) methods for treating DMD by utilizing pairs of engineered nucleases to remove an exon from the dystrophin gene and (2) methods for removing DNA sequences from the genome of a cell by utilizing pairs of engineered nucleases. Patents in this family will have a standard expiration date of March 12, 2035, subject to potential extensions.

The seventh family includes one issued patent in the United States, two pending patent applications in the United States, and pending patent applications in each of Europe, Australia, Canada, China, Israel, Japan, Mexico, and South Korea. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within the dystrophin gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viruses comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, recombinant viruses, and lipid nanoparticle compositions, (6) methods of producing genetically modified eukaryotic cells having a modified dystrophin gene with such engineered meganucleases, (7) methods of modifying a dystrophin gene in a subject by delivering such engineered meganucleases to a target cell, and (8) methods for treating DMD, which is characterized by a mutation within the dystrophin gene, by administering such engineered meganucleases. Patents in this family will have a standard expiration date of November 12, 2041.

The eighth family includes one issued patent in each of the United States, Europe, Australia, China, Israel, Japan, Mexico, and South Korea, two pending patent applications in each of the United States and Japan, and pending patent applications in each of Europe, Australia, Canada, China, Hong Kong, Israel, Mexico, and South Korea. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within a PCSK9 gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, and recombinant viral vectors, and (5) methods for reducing expression of PCSK9 in a subject by administering such engineered meganucleases. Patents in this family will have a standard expiration date of April 20, 2038, subject to potential extensions.

The ninth family includes a pending PCT international patent application. Patents in this family include claims directed to (1) polynucleotides comprising template nucleic acids for insertion in a SERPINA1 gene, (2) recombinant viruses comprising such polynucleotides, (3) lipid nanoparticle compositions comprising such polynucleotides, (4) pharmaceutical compositions comprising such polynucleotides, (5) methods of producing genetically modified eukaryotic cells having a modified SERPINA1 gene by introduction of such engineered meganucleases and such template nucleic acids to a eukaryotic cell, (6) methods of modifying a SERPINA1 gene in a target cell by introduction of such engineered meganucleases and such template nucleic acids to a target cell, and (7) methods of treating AAT deficiency in a subject by administering pharmaceutical compositions comprising such engineered meganucleases and such template nucleic acids to a subject. Patents in this family, if issued, will have a standard expiration date of October 19, 2042.

The tenth family includes a pending PCT international patent application. Patents in this family include claims directed to (1) second generation engineered meganucleases that cleave recognition sequences within a SERPINA1 gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viruses comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, recombinant viruses, and lipid nanoparticle compositions, (6) polynucleotides comprising template nucleic acids for insertion in a SERPINA1 gene, (7) recombinant viruses comprising such template nucleic acids, (8) lipid nanoparticle compositions comprising such template nucleic acids, (9) pharmaceutical compositions

comprising such template nucleic acids, (10) methods of producing genetically modified eukaryotic cells having a modified SERPINA1 gene by introduction of such engineered meganucleases and such template nucleic acids to a eukaryotic cell, (11) methods of modifying a SERPINA1 gene in a target cell by introduction of such engineered meganucleases and such template nucleic acids to a target cell, and (12) methods of treating AAT deficiency in a subject by administering pharmaceutical compositions comprising such engineered meganucleases and such template nucleic acids to a subject. Patents in this family, if issued, will have a standard expiration date of October 19, 2042.

The eleventh family includes two issued patents in each of the United States and Japan, one issued patent in Australia, pending patent applications in each of the United States, Europe, Australia, and Canada, and two pending patent applications in Japan. Patents in this family include claims directed to (1) first generation engineered meganucleases that cleave recognition sequences within a mutant rhodopsin gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant AAV vectors comprising nucleic acids encoding such engineered meganucleases, and (4) methods for treating retinitis pigmentosa by administering such engineered meganucleases. Patents in this family will have a standard expiration date of September 8, 2036, subject to potential extensions.

The twelfth family includes pending patent applications in each of the United States, Europe, and Canada. Patents in this family include claims directed to (1) second generation engineered meganucleases that cleave recognition sequences within a mutant rhodopsin gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viruses comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) genetically modified eukaryotic cells comprising nucleic acids encoding such engineered meganucleases, (7) genetically modified eukaryotic cells comprising a modified rhodopsin gene, (8) methods of producing genetically modified eukaryotic cells having a disrupted target sequence in a chromosome by introduction of such engineered meganucleases, (9) methods of producing genetically modified eukaryotic cells having an exogenous sequence of interest inserted in a chromosome by introduction of such engineered meganucleases and a nucleic acid having the sequence of interest, (10) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, recombinant viruses, and lipid nanoparticle compositions, and (11) methods for treating retinitis pigmentosa by administering such engineered meganucleases or such pharmaceutical compositions. Patents in this family, if issued, will have a standard expiration date of May 11, 2041, subject to potential extensions.

The thirteenth family includes pending patent applications in each of the United States and Europe. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within an HAO1 gene, (2) nucleic acids encoding such engineered meganucleases, (3) viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) methods of producing genetically modified eukaryotic cells having a disrupted target sequence in a chromosome by introduction of such engineered meganucleases, (5) methods of producing genetically modified eukaryotic cells having an exogenous sequence of interest inserted in a chromosome by introduction of such engineered meganucleases and a nucleic acid having the sequence of interest, (6) methods of producing genetically modified eukaryotic cells having a modified HAO1 gene by introduction of such engineered meganucleases, (7) genetically modified eukaryotic cells made by such methods, (8) genetically modified eukaryotic cells comprising a modified HAO1 gene, (9) pharmaceutical compositions comprising such engineered meganucleases and nucleic acids encoding such engineered meganucleases, (10) methods for treating primary hyperoxaluria type I by administering such engineered meganucleases, and (11) recombinant HAO1 polypeptides lacking a functional peroxisomal targeting signal. Patents in this family, if issued, will have a standard expiration date of December 20, 2039, subject to potential extensions.

The fourteenth family includes pending patent applications in each of the United States, Europe, and Canada. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within an HAO1 gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viruses comprising nucleic acids encoding such engineered meganucleases, (4) lipid nanoparticle compositions comprising nucleic acids encoding such engineered meganucleases, (5) pharmaceutical compositions comprising such engineered meganucleases, nucleic acids, recombinant viruses, and lipid nanoparticle compositions, (6) methods of producing genetically modified eukaryotic cells having a modified HAO1 gene with such engineered meganucleases, (7) methods of modifying an HAO1 gene in a subject by delivering such engineered meganucleases to a target cell, (8) genetically modified eukaryotic cells made by such methods, (9) genetically modified eukaryotic cells comprising a modified HAO1 gene, and (10) methods for treating primary hyperoxaluria type I by administering such engineered meganucleases. Patents in this family, if issued, will have a standard expiration date of January 7, 2042, subject to potential extensions.

The fifteenth family includes one issued patent in each of the United States, Europe, and Australia, and pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within the int22h-1 region of the Factor VIII gene, (2) nucleic acids encoding such engineered meganucleases, (3) viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) pharmaceutical compositions comprising such engineered meganucleases or nucleic acids encoding such engineered meganucleases, and (5) methods for treating hemophilia A by administration of such pharmaceutical compositions. Patents in this family will have a standard expiration date of May 3, 2037, subject to potential extensions.

The sixteenth family includes pending patent applications in each of the United States and Europe. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within the int22h-1 region of the Factor VIII gene, (2) nucleic acids encoding such engineered meganucleases, (3) viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) pharmaceutical compositions comprising such engineered meganucleases or nucleic acids encoding such engineered meganucleases, (5) methods for treating hemophilia A by administration of such pharmaceutical compositions, (6) methods for genetically modifying a Factor VIII gene in a mammalian cell by introducing such engineered meganucleases, and (7) genetically-modified cells made by such methods. Patents in this family, if issued, will have a standard expiration date of November 1, 2038, subject to potential extensions.

The seventeenth family includes pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within a transthyretin (TTR) gene, (2) nucleic acids encoding such engineered meganucleases, (3) recombinant viruses comprising nucleic acids encoding such engineered meganucleases, (4) methods of producing genetically modified eukaryotic cells having a disrupted target sequence in a chromosome by introduction of such engineered meganucleases, (5) methods of producing genetically modified eukaryotic cells having an exogenous sequence of interest inserted in a chromosome by introduction of such engineered meganucleases and a nucleic acid having the sequence of interest, (6) methods of producing genetically modified eukaryotic cells having a modified TTR gene by introduction of engineered nucleases, (7) methods for modifying a TTR gene by delivering such engineered meganucleases, (8) genetically modified eukaryotic cells made by such methods, (9) genetically modified eukaryotic cells comprising a modified TTR gene, (10) lipid nanoparticle compositions comprising such engineered meganucleases, and (11) pharmaceutical compositions comprising such engineered meganucleases and lipid nanoparticle compositions. Patents in this family, if issued, will have a standard expiration date of August 20, 2041, subject to potential extensions.

The eighteenth family includes one issued patent in Europe, and pending patent applications in each of the United States and Europe. Patents in this family include claims directed to (1) methods for treating subjects having nucleotide repeat expansion disorders, (2) pharmaceutical compositions comprising nucleases for treatment of nucleotide repeat expansion disorders, (3) engineered meganucleases that cleave recognition sequences within a frataxin (FXN) gene, (4) nucleic acids encoding such engineered meganucleases, (5) recombinant viral vectors comprising nucleic acids encoding such engineered meganucleases, and (6) methods for promoting precise deletion of loci flanked by repeat sequences in populations of eukaryotic cells. Patents in this family will have a standard expiration date of May 2, 2036, subject to potential extensions.

The nineteenth family includes one pending PCT international patent application. Patents in this family include claims directed to (1) polynucleotides comprising nucleic acids encoding heterologous proteins for expression, (2) recombinant viruses comprising such polynucleotides, (3) lipid nanoparticle compositions comprising such polynucleotides, (4) pharmaceutical compositions comprising such polynucleotides, recombinant viruses, and lipid nanoparticle compositions, (5) eukaryotic cells comprising such polynucleotides, (6) methods for expressing heterologous proteins in eukaryotic cells by introduction of such polynucleotides, (7) methods for producing genetically-modified eukaryotic cells by introduction of such polynucleotides encoding an engineered nuclease, and (8) methods for treating a disease in a subject by administration of such polynucleotides encoding a therapeutic protein. Patents in this family, if issued, will have a standard expiration date of January 6, 2043.

The twentieth family includes pending patent applications in each of the United States and Europe. Patents in this family include claims directed to (1) engineered meganucleases that cleave recognition sequences within a transferrin gene, (2) nucleic acids encoding such engineered meganucleases, (3) viral vectors comprising nucleic acids encoding such engineered meganucleases, (4) template nucleic acids for insertion within a transferrin gene, (5) methods of producing genetically modified eukaryotic cells having an exogenous sequence of interest inserted in a chromosome by introduction of such engineered meganucleases and a nucleic acid having the sequence of interest, (6) methods of producing genetically modified eukaryotic cells having a modified transferrin gene by introduction of engineered nucleases, (7) methods of producing genetically modified eukaryotic cells having a modified transferrin gene by introduction of engineered nucleases and a template nucleic acid, (8) genetically modified eukaryotic cells made by such methods, (9) genetically modified eukaryotic cells comprising a modified transferrin gene, (10) pharmaceutical compositions comprising such engineered meganucleases and template nucleic acids, and (11) methods for treating a disease by administration of such pharmaceutical compositions. Patents in this family, if issued, will have a standard expiration date of January 10, 2040, subject to potential extensions.

We own eight additional patent families that include pending provisional patent applications in the United States that are directed to *in vivo* gene editing. We will determine in the future whether to pursue each of these applications.

Immunotherapy Patent Families

We own 23 patent families, including one jointly-owned patent family, that are directed to immunotherapy, including CAR T cell therapies. Some of these are applicable to immunotherapies and/or CAR T cells directed to killing a variety of different types of infected or cancerous cells. Others are directed to specific indications in which cells expressing particular antigens are targeted, or

methods of manufacturing immunotherapies. Each of our immunotherapy product candidates is protected by one or more patents in these families.

The first family includes ten issued patents in the United States, three issued patents in Israel, two issued patents in Europe and Hong Kong, one issued patent in each of Australia, China, Japan, and Mexico, pending patent applications in each of the United States, Europe, Australia, Canada, China, Hong Kong, Israel, Mexico, and South Korea, and two pending patent applications in Japan. Patents in this family include claims directed to (1) populations of genetically modified human T cells in which 20%-65% of the cells have reduced expression of an endogenous TCR and express an anti-cancer antigen CAR from DNA inserted into the cells' TCR alpha constant region (TRAC) gene, (2) methods for using such populations of genetically modified human T cells for cancer immunotherapy, (3) pharmaceutical compositions comprising such populations of genetically modified human T cells, (4) genetically modified human T cells which have reduced expression of an endogenous TCR and express an anti-cancer antigen CAR from DNA inserted into the cells' TRAC gene, (5) methods for using such genetically modified human T cells for cancer immunotherapy, and (6) pharmaceutical compositions comprising such genetically modified human T cells. Patents in this family will have a standard expiration date of October 5, 2036, subject to potential extensions.

The second family includes two issued patents in each of the United States, Europe, and Australia, one issued patent in each of Hong Kong and Japan, and pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patent applications in this family include claims directed to (1) first-generation recombinant meganucleases that cleave a target in the TRAC gene, (2) nucleic acids and vectors encoding such recombinant meganucleases, (3) methods for producing genetically modified eukaryotic cells, including CAR T cells, using such meganucleases, and (4) methods of using such genetically modified eukaryotic cells for cancer immunotherapy. Patents in this family will have a standard expiration date of October 5, 2036, subject to potential extensions.

The third family includes one issued patent in each of the United States, Europe, Israel, Japan, Mexico, and South Korea, and pending patent applications in each of the United States, Europe, Australia, Canada, China, Hong Kong, Israel, Japan, Mexico, and South Korea. Patent applications in this family include claims directed to (1) second-generation engineered meganucleases that cleave a specific target in the TRAC gene, (2) nucleic acids and vectors encoding such recombinant meganucleases, (3) methods for producing genetically modified eukaryotic cells, including CAR T cells, using such meganucleases, (4) genetically modified eukaryotic cells or populations of cells prepared by such methods, (5) pharmaceutical compositions comprising such cells or populations of cells, and (6) methods of treating diseases using such cells, populations of cells or pharmaceutical compositions to treat diseases, including cancer immunotherapy. Patents in this family, if issued, will have a standard expiration date of April 11, 2039, subject to potential extensions.

The fourth family includes two issued patents in each of the United States, Europe, Australia, Hong Kong, and Japan, and pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patent applications in this family include claims directed to (1) nucleic acids encoding co-stimulatory domains having certain amino acid sequences, (2) recombinant DNA constructs and vectors comprising such nucleic acids, (3) nucleic acids and vectors encoding such recombinant meganucleases, (4) genetically modified cells comprising such nucleic acids, (5) methods for producing such genetically modified cells, (6) pharmaceutical compositions comprising such cells, and (7) methods of immunotherapy using such cells. Patents in this family will have a standard expiration date of October 4, 2037, subject to potential extensions.

The fifth family includes two issued patents in Japan, one issued patent in each of Europe and Australia, and pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patent applications in this family include claims directed to (1) recombinant meganucleases that recognize and cleave a recognition sequence within the human β2m gene, (2) nucleic acids and vectors encoding such recombinant meganucleases, (3) methods for producing genetically modified eukaryotic cells, including CAR T cells, using such meganucleases, (4) populations of genetically modified eukaryotic cells in which 80% of the cells have reduced expression of an endogenous TCR and 80% of the cells have reduced expression of β2m, (5) pharmaceutical compositions comprising such populations of genetically modified eukaryotic cells, and (6) methods for using such genetically modified eukaryotic cells for cancer immunotherapy. Patents in this family will have a standard expiration date of December 22, 2036, subject to potential extensions.

The sixth family includes one issued patent in each of the United States and Japan, and pending patent applications in each of the United States, Europe, Australia, Canada, and Japan. Patent applications in this family include claims directed to (1) nucleic acids encoding an engineered antigen receptor (e.g., a CAR) and an inhibitory molecule (e.g., an RNA interfering with β2m expression), (2) genetically modified eukaryotic cells comprising such nucleic acids, (3) methods for producing such genetically modified eukaryotic cells using such nucleic acids and an engineered nuclease that promotes insertion of such nucleic acids, (4) genetically modified eukaryotic cells expressing an engineered antigen receptor and having expression of β2m or MHC Class I molecules reduced by 10%-95%, (5) pharmaceutical compositions comprising such genetically modified eukaryotic cells, and (6) methods for using such genetically modified eukaryotic cells for immunotherapy. Patents in this family will have a standard expiration date of May 8, 2038, subject to potential extensions.

The seventh family includes one issued patent in the United States, and pending patent applications in each of the United States, Europe, Australia, Canada, Hong Kong, and Japan. Patent applications in this family include claims directed to (1) engineered meganucleases that recognize and cleave a recognition sequence in an upstream intron of the human TRAC gene, (2) nucleic acids and vectors encoding such engineered meganucleases, (3) methods for producing genetically modified T cells using such nucleic acids or vectors, (4) genetically modified T cells in which an exogenous sequence is inserted into an upstream intron of the human TRAC gene and endogenous TCR expression is reduced, (5) populations of such genetically modified T cells, (6) pharmaceutical compositions comprising such genetically modified T cells, and (7) methods of treating disease using such genetically modified T cells and pharmaceutical compositions, including cancer immunotherapy. Patents in this family will have a standard expiration date of June 27, 2038, subject to potential extensions.

The eighth family includes one issued patent in Europe, and pending patent applications in each of the United States and Europe. Patent applications in this family include claims directed to (1) nucleic acids and vectors encoding certain modified human epidermal growth factor receptor, or EGFRs, (2) genetically modified cells and populations of cells, including T cells and CAR T cells, expressing such modified EGFRs, (3) methods for producing such genetically modified cells using such nucleic acids or vectors encoding such modified EGFRs, (4) pharmaceutical compositions comprising such genetically modified cells, (5) methods for isolating such genetically modified cells, (6) methods of treating disease using such genetically modified cells and pharmaceutical compositions, including cancer immunotherapy, and (7) methods of depleting such genetically modified cells in a subject using anti-modified EGFR antibodies. Patents in this family will have a standard expiration date of October 3, 2038, subject to potential extensions.

The ninth family includes pending patent applications in each of the United States, Europe, and Canada. Patent applications in this family include claims directed to (1) methods for preparing genetically-modified immune cells, (2) populations of genetically-modified immune cells, (3) pharmaceutical compositions comprising such populations of genetically-modified immune cells, (4) methods of treating a disease using such populations of genetically-modified immune cells, (5) lipid nanoparticle compositions, and (6) kits for transfecting a eukaryotic cell with mRNA. Patents in this family, if issued, will have a standard expiration date of April 3, 2040, subject to potential extensions.

The tenth family includes five issued patents in the United States, two issued patents in Israel, one issued patent in each of Europe, China, and Japan, and pending patent applications in each of the United States, Europe, Australia, Canada, China, Hong Kong, Israel, Japan, Mexico, and South Korea. Patent applications in this family include claims directed to (1) a genetically-modified immune cell comprising in its genome a nucleic acid sequence encoding a microRNA-adapted shRNA, (2) a method for reducing the expression of an endogenous protein in an immune cell, (3) immune cells made by such methods, (4) populations of such immune cells, (5) pharmaceutical compositions comprising such populations of immune cells, and (6) methods of immunotherapy for treating a disease in a subject. Patents in this family will have a standard expiration date of April 3, 2040, subject to potential extensions.

The eleventh family includes pending patent applications in each of the United States, Europe, Australia, Canada, Hong Kong, and Japan. Patent applications in this family include claims directed to methods of immunotherapy comprising administering to a subject a CD3 antibody, or antigen binding fragment thereof, that binds CD3 for the purpose of lymphodepletion, in combination with the administration of genetically-modified T cells that do not have detectable CD3 expression on the cell surface. Patents in this family, if issued, will have a standard expiration date of August 20, 2040, subject to potential extensions.

The twelfth family includes a pending patent application in the United States. Patent applications in this family include claims directed to (1) polynucleotides encoding a CD20-specific chimeric antigen receptor, (2) methods of producing a genetically-modified T cell comprising such polynucleotides, (3) a genetically-modified T cell comprising such polynucleotides, (4) populations of such genetically-modified T cells, (5) pharmaceutical compositions comprising such genetically-modified T cells or populations, and (6) methods of immunotherapy for treating cancer in a subject. Patents in this family, if issued, will have a standard expiration date of October 30, 2040, subject to potential extensions.

The thirteenth family includes pending patent applications in each of the United States, Europe, and Canada. Patent applications in this family include claims directed to a method of immunotherapy for treating cancer in a subject. Patents in this family, if issued, will have a standard expiration date of December 3, 2040, subject to potential extensions.

The fourteenth family includes a pending patent application in the United States. Patent applications in this family include claims directed to methods for reducing the number of target cells, such as cancer cells, in a subject. Patents in this family, if issued, will have a standard expiration date of May 14, 2041, subject to potential extensions.

The fifteenth family includes a pending patent application in the United States. Patent applications in this family include claims directed to a method for reducing the number of target cells, such as cancer cells, in a subject. Patents in this family, if issued, will have a standard expiration date of May 14, 2041, subject to potential extensions.

The sixteenth family includes pending patent applications in each of the United States and Europe. Patent applications in this family include claims directed to (1) an isolated antibody, or antigen-binding fragment thereof, that specifically binds to BCMA, (2) a pharmaceutical composition comprising such an antibody, (3) a polynucleotide encoding such an antibody, and an expression vector comprising the same, (5) a method of treating cancer in a subject, (6) a polynucleotide comprising a nucleic acid sequence encoding a chimeric antigen receptor having an anti-BCMA binding domain, (7) a genetically-modified eukaryotic cell comprising such a polynucleotide, (8) a method for producing such a genetically-modified eukaryotic cell, (9) a population of such genetically-modified eukaryotic cells, (10) a pharmaceutical composition comprising such a population, and (11) a method for treating cancer in a subject. Patents in this family, if issued, will have a standard expiration date of August 10, 2041, subject to potential extensions.

The seventeenth family includes a pending patent application in the United States. Patent applications in this family include claims directed to (1) a lipid nanoparticle composition, (2) a method for transfecting a population of eukaryotic cells, (3) a method for introducing a nucleic acid into a population of eukaryotic cells, (4) a population of such eukaryotic cells, (5) a pharmaceutical composition comprising such a population, and (6) a method for reducing the number of target cells in a subject. Patents in this family, if issued, will have a standard expiration date of October 6, 2041, subject to potential extensions.

The eighteenth family includes pending patent applications in each of the United States and Europe. Patent applications in this family include claims directed to (1) a genetically-modified eukaryotic cell comprising a nucleic acid sequence encoding a TGFB-1 inhibitory agent and a nucleic acid sequence encoding an engineered antigen receptor, (2) a genetically-modified eukaryotic cell comprising an inactivated TGFB-1 gene and a nucleic acid sequence encoding an engineered antigen receptor, (3) methods of producing such genetically-modified eukaryotic cells, (4) populations of such genetically-modified eukaryotic cells, (5) pharmaceutical compositions comprising such genetically-modified eukaryotic cells, and (6) methods for reducing the number of target cells in a subject comprising administering such populations of genetically-modified eukaryotic cells. Patents in this family, if issued, will have a standard expiration date of January 28, 2042, subject to potential extensions.

The nineteenth family includes a pending PCT international patent application. Patent applications in this family include claims directed to (1) a method for reducing the number of target cells in a subject, (2) a method for reducing host rejection of genetically-modified human immune cells in a subject, and (3) a method for reducing nucleoside analog-induced killing of genetically-modified human immune cells in a subject. Patents in this family, if issued, will have a standard expiration date of November 3, 2042, subject to potential extensions.

The twentieth family includes a pending PCT international patent application. Patent applications in this family include claims directed to a method for reducing the number of target cells in a subject. Patents in this family, if issued, will have a standard expiration date of November 15, 2042, subject to potential extensions.

The twenty-first family includes a pending PCT international patent application. Patent applications in this family include claims directed to (1) a method for reducing the number of cancer cells in a subject, and (2) a method for treating cancer in a subject who has relapsed following an autologous cell therapy. Patents in this family, if issued, will have a standard expiration date of December 9, 2042, subject to potential extensions.

We own one additional patent family that includes a pending provisional patent application in the United States that is directed to ARCUS nucleases useful in cell immunotherapy, and we jointly own one patent family that includes a pending PCT international patent application directed to CAR T cell therapies. We will determine in the future whether to pursue each of these applications.

Other Patent Families

We license from Duke one patent family directed to engineered fusion proteins comprising engineered meganuclease domains and effector domains which may be useful in controlling gene expression. This patent family includes one pending patent application in the United States. Patents in this family, if issued, will have a standard expiration date of October 18, 2026, subject to potential extensions.

We own one patent family directed to engineered meganucleases that target amplifiable genetic loci and may be useful in producing cells with amplified transgenes. This family includes two issued patents in Europe, one issued patent in the United States, and pending patent applications in each of the United States and Europe. Patents in this family will have a standard expiration date of June 1, 2032, subject to potential extensions.

We own two patent families directed to self-limiting viral vectors (e.g., AAV vectors) that encode engineered meganucleases which eliminate and/or reduce the persistence of the vector after gene delivery. The first family includes one issued patent in each of the United States and Europe and pending patent applications in each of the United States and Europe. Patents in this family will have a standard expiration date of June 20, 2036, subject to potential extensions. The second family includes a pending patent application in

the United States. Patents in this family, if issued, will have a standard expiration date of May 10, 2041, subject to potential extensions.

We own one patent family directed to compositions and methods for sequential stacking of nucleic acid sequences into a genomic locus. This family includes pending patent applications in each of the United States and Europe. Patents in this family, if issued, will have a standard expiration date of July 24, 2040, subject to potential extensions.

We jointly own one patent family directed to methods for generating male sterile plants. This family includes one pending PCT international patent application, and one pending patent application in the United States. Patents in this family, if issued, will have a standard expiration date of April 22, 2042.

We own an issued patent in the United States directed to engineered meganucleases which target a genetic locus in maize and methods for genetically modifying that locus in maize. That patent has a standard expiration date of March 2, 2029, subject to potential extensions.

For any individual patent, the term depends on the applicable law in the country in which the patent is granted. In most countries where we have filed patent applications or in-licensed patents and patent applications, patents have a term of 20 years from the application filing date or earliest claimed non-provisional priority date. In the United States, the patent term is 20 years but may be shortened if a patent is terminally disclaimed over another patent that expires earlier. The term of a U.S. patent may also be lengthened by a patent term adjustment to address administrative delays by the United States Patent and Trademark Office (the "USPTO") in granting a patent.

In the United States, the term of a patent that covers an FDA-approved drug or biologic may be eligible for patent term extension in order to restore the period of a patent term lost during the premarket FDA regulatory review process. The Hatch-Waxman Act permits a patent term extension of up to five years beyond the natural expiration of the patent. The patent term restoration period is generally equal to the portion of the FDA regulatory review period for the approved product that occurs after the date the patent is issued, subject to certain exceptions. Only one patent may be extended for a regulatory review period for any product, and the application for the extension must be submitted prior to the expiration of the patent. In the future, we may decide to apply for restoration of patent term for one of our currently owned or licensed patents to extend its current expiration date, depending on the expected length of the clinical studies and other factors involved in the filing of the relevant Biologics License Application ("BLA").

We or our licensors may be subject to claims that former employees, collaborators or other third parties have an interest in our owned or in-licensed patents or other intellectual property as an inventor or co-inventor. If we are required to and unable to obtain an exclusive license to any such third-party co-owners' interest in such patent applications, such co-owners may be able to license their rights to other third parties, including our competitors. In addition, we may need the cooperation of any such co-owners to enforce any patents that issue from such patent applications against third parties, and such cooperation may not be provided to us. We or our licensors are subject to and may also become a party to similar proceedings or priority disputes in Europe or other foreign jurisdictions.

Our trademark portfolio currently contains four registered trademarks in the United States, including ARCUS, ARC NUCLEASE, PRECISION BIOSCIENCES (Stylized) and PRECISION BIOSCIENCES. We also own registered trademarks for both ARCUS and ARC NUCLEASE in Australia, China, and Europe, a registered trademark for ARCUS in Canada, and registered trademarks for PRECISION BIOSCIENCES (Stylized) in Australia, Europe, and United Kingdom. Additionally, we own a pending trademark application for PRECISION BIOSCIENCES (Stylized) in Canada.

Licensed Intellectual Property

Duke University

In April 2006, we exclusively licensed from Duke families of patents and patent applications related to certain meganucleases and methods of making such nucleases owned by Duke. The patent family covered by the Duke License comprises the core patents covering ARCUS described above. See "*—License and Collaboration Agreements—Duke University*" above for additional information regarding the Duke License.

Cellectis S.A.

In January 2014, we entered into the Cellectis License, which relates to certain modified I-CreI homing endonuclease patents and patents that had been subject to litigation between us and Cellectis. The patents to which we have rights under the cross-license include at least seven issued patents in the United States, three issued patents in Europe, two issued patents in Australia, and one

issued patent in Canada. These patents have standard expiration dates prior to January 29, 2034, subject to potential extensions. See "*—License and Collaboration Agreements—Cellectis S.A*." above for additional information regarding the Cellectis License.

Government Regulation

The FDA and other regulatory authorities at federal, state, and local levels, as well as in foreign countries, extensively regulate, among other things, the research, development, testing, manufacture, quality control, import, export, safety, effectiveness, labeling, packaging, storage, distribution, record keeping, approval, advertising, promotion, marketing, post-approval monitoring, and post-approval reporting of biological product candidates such as those we are developing. We, along with third-party contractors, will be required to navigate the various preclinical, clinical and commercial approval requirements of the governing regulatory agencies of the countries in which we wish to conduct studies or seek approval or licensure of our product candidates. 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.

U.S. Biologics Regulation

The process required by the FDA before biologic product candidates may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests and animal studies performed in accordance with the FDA's Good Laboratory Practice requirements and other applicable regulations;
- demonstration of successful, reproducible manufacture of clinical trial material produced in compliance with cGMPs and consistent with all release specifications for the product at initial manufacture and over time when stored under defined conditions;
- submission to the FDA of an IND, which must become effective before clinical trials may begin, and which must be properly maintained throughout the course of clinical development;
- approval by an Investigational Review Board ("IRB") or ethics committee, and potential additional scientific and biosafety review committees at each clinical site before the trial is commenced;
- performance of adequate and well-controlled human clinical trials following protocols to establish the safety, purity, potency, or effectiveness of the proposed biologic product candidate for its intended purpose;
- preparation of and submission to the FDA of a BLA after completion of all pivotal clinical trials;
- a determination by the FDA within 60 days of its receipt of a BLA to file the application for review;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities at which the proposed commercial product is produced to assess compliance with cGMP and to assure that the facilities, methods and controls are adequate to preserve the biological product's continued safety, purity and potency, and potential FDA inspection of selected clinical investigation sites to assess compliance with Good Clinical Practices ("GCPs"); and
- satisfactory completion of an FDA Advisory Committee review, if applicable;
- FDA review and approval of the BLA to permit commercial marketing of the product for particular indications for use in the United States.

Prior to beginning the first clinical trial with a product candidate in the United States, we must submit an IND to the FDA. An IND is a request for allowance from the FDA to administer an investigational new drug product to humans. A central focus of an IND submission is on the general investigational plan and the protocol(s) for clinical studies. The IND also includes results of animal and *in vitro* studies assessing the toxicology, pharmacokinetics, pharmacology, and pharmacodynamic characteristics of the product; chemistry, manufacturing, and controls information; and any available human data or literature to support the use of the investigational product according to the proposed clinical protocol including the proposed dose level(s). An IND must become effective before human clinical trials may begin. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, raises safety concerns or questions about the proposed clinical trial. In such a case, the IND may be placed on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns or questions before the clinical trial can begin. Submission of an IND therefore may or may not result in FDA allowance to begin a clinical trial.

In addition to the submission of an IND to the FDA before initiation of a clinical trial in the United States, certain human clinical trials involving recombinant or synthetic nucleic acid molecules are subject to oversight of institutional biosafety committees, or IBCs, as set forth in the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules, or NIH Guidelines.

Specifically, under the NIH Guidelines, supervision of human gene transfer trials includes evaluation and assessment by an IBC, a local institutional committee that reviews and oversees research utilizing recombinant or synthetic nucleic acid molecules at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment, and such review may result in some delay before initiation of a clinical trial. While the NIH Guidelines are not mandatory unless the research in question is being conducted at or sponsored by institutions receiving NIH funding of recombinant or synthetic nucleic acid molecule research, many companies and other institutions not otherwise subject to the NIH Guidelines voluntarily follow them.

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical study. Clinical trials are conducted under protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A separate submission to the existing IND must be made for each successive clinical trial conducted during product development and for any subsequent protocol amendments. While the IND is active, progress reports summarizing the results of the clinical trials and nonclinical studies performed since the last progress report, among other information, must be submitted at least annually to the FDA, and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the drug, findings from animal or *in vitro* testing suggesting a significant risk to humans exposed to the drug, and any clinically important increased rate of a serious suspected adverse reaction compared to that listed in the protocol or investigator brochure.

Furthermore, for each site proposing to conduct the clinical trial an independent IRB must review and approve the plan for any clinical trial and the informed consent form before the clinical trial begins at that site, and must monitor the study until completed. Regulatory authorities, the IRB, or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable health risk or that the trial is unlikely to meet its stated objectives. Some studies also include oversight by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board, which provides authorization for whether or not a study may move forward at designated check points based on review of certain data from the study and may halt the clinical trial if it determines that there is an unacceptable safety risk for subjects or other grounds, such as no demonstration of efficacy. There are also requirements governing the reporting of ongoing clinical studies and clinical study results to public registries.

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

- Phase 1—The investigational product is initially introduced into healthy human subjects or patients with the target disease or condition. These studies are designed to test the safety, dosage tolerance, absorption, metabolism and distribution of the investigational product in humans, the side effects associated with increasing doses, and, if possible, to gain early evidence on effectiveness.
- Phase 2—The investigational product is administered to a limited patient population with a specified disease or condition to evaluate the preliminary efficacy, optimal dosages and dosing schedule and to identify possible adverse side effects and safety risks. Multiple Phase 2 clinical trials may be conducted to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- Phase 3—The investigational product is administered to an expanded patient population to further evaluate dosage, to provide statistically significant evidence of clinical efficacy and to further test for safety, generally at multiple geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk/benefit ratio of the investigational product and to provide an adequate basis for product approval.

In some cases, the FDA may require, or companies may voluntarily pursue, additional clinical trials after a product is approved to gain more information about the product. These so-called Phase 4 studies may be made a condition to approval of the BLA.

Concurrent with clinical trials, companies may complete additional animal studies and develop additional information about the biological characteristics of the product candidate, and must finalize a process for manufacturing the product in commercial quantities in accordance with cGMP. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, must develop methods for testing the identity, strength, potency, quality and purity of the final product, or for biologics, the safety, purity and potency. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

BLA Submission and Review by the FDA

Assuming successful completion of all required testing in accordance with all applicable regulatory requirements, the results of product development, including results from nonclinical studies and clinical trials are submitted to the FDA as part of a BLA

requesting approval to market the product for one or more indications. The BLA must include all relevant data available from pertinent preclinical and clinical studies, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's chemistry, manufacturing, controls, and proposed labeling, among other things. Data can come from company-sponsored clinical studies intended to test the safety and effectiveness of a use of the product, or from a number of alternative sources, including studies initiated by investigators. The submission of a BLA requires payment of a substantial user fee to FDA, and the sponsor of an approved BLA is also subject to an annual program fee. These fees are typically increased annually. A waiver of user fees may be obtained under certain limited circumstances. Additionally, no user fees are assessed on BLAs for products designated as orphan drugs, unless the application also includes a non-orphan indication.

Within 60 days following submission of the application, the FDA reviews all NDAs and BLAs submitted to ensure that they are sufficiently complete for substantive review before it accepts them for filing. The FDA may request additional information rather than accept an NDA or BLA for filing. In this event, the NDA or BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once a BLA has been accepted for filing, the FDA begins an in-depth substantive review. The FDA reviews a BLA to determine, among other things, whether a product is safe, pure and potent and the facility in which it is manufactured, processed, packed, or held meets standards designed to assure the product's continued safety, purity, and potency. The FDA's goal is to review standard applications within ten months after it accepts the application for filing, or, if the application qualifies for priority review, six months after the FDA accepts the application for filing. Priority review designation will direct overall attention and resources to the evaluation of applications for product candidates that, if approved, would represent significant improvements in the safety or effectiveness of the treatment, diagnosis, or prevention of serious conditions. In both standard and priority reviews, the review process may be extended for a three month period for FDA to review additional information deemed a "major amendment" to an application. The FDA may convene an advisory committee to provide clinical insight on application review questions. Before approving a BLA, the FDA will typically inspect the facility or facilities where the product is manufactured. Additionally, before approving a BLA, the FDA may inspect one or more clinical sites involved in the pivotal studies submitted in the BLA to assure compliance with GCP.

After the FDA evaluates a BLA and conducts any inspections of manufacturing facilities where the investigational product and/or its drug substance will be produced, the FDA may issue an approval letter or a Complete Response Letter ("CRL") if the FDA determines that the application, manufacturing process or manufacturing facilities are not acceptable. In the CRL, the FDA will outline the deficiencies in the BLA submission and often will request additional information or testing that the applicant might perform to place the BLA in condition for approval, including requests for additional information or clarification. Notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval. Note that where the FDA determines that the data supporting the application are inadequate to support approval, the FDA may issue the CRL without first conducting required inspections, testing submitted product lots, and/or reviewing proposed labeling. The FDA may delay or refuse approval of a BLA if applicable regulatory criteria are not satisfied, require additional testing or information and/or require post-marketing testing and surveillance to monitor safety or efficacy of a product.

If regulatory approval of a product is granted, such approval will be granted for particular indications and may entail limitations on the indicated uses for which such product may be marketed. For example, the FDA may approve the BLA with the requirement that a Risk Evaluation and Mitigation Strategy ("REMS") be established to ensure the benefits of the product outweigh its risks when used according to the approved label. A REMS is a safety strategy to manage a known or potential serious risk associated with a medicine and to enable patients to have continued access to such medicines by managing their safe use, and could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries, required prescriber training, and other risk minimization tools. The FDA also may condition approval on, among other things, changes to proposed labeling or the development of adequate controls and specifications. The FDA may also require one or more Phase 4 post-market studies and additional surveillance to further assess and monitor the product's safety and effectiveness after commercialization, and may limit further marketing of the product based on the results of these post-marketing studies.

In addition, the Pediatric Research Equity Act ("PREA") requires a sponsor to conduct pediatric clinical trials for most biologics, for a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration. Under PREA, BLAs and supplements thereto must contain a pediatric assessment unless the sponsor has received a deferral or waiver. The required assessment must evaluate the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and support dosing and administration for each pediatric subpopulation for which the product has been determined safe and effective. The sponsor or FDA may request a deferral of pediatric clinical trials for some or all of the pediatric subpopulations. A deferral may be granted for several reasons, including a finding that the biologic is ready for approval for use in adults before pediatric clinical trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric clinical trials begin. The FDA must send a noncompliance letter to any sponsor that fails to submit the required assessment, keep a deferral current or fails to submit a request for approval of a pediatric formulation.

Expedited Development and Review Programs

A sponsor may seek approval of its product candidate under programs designed to expedite FDA's review and approval of biological products that meet certain criteria. Specifically, biological products are eligible for fast track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Fast track designation applies to the combination of the product candidate and the specific indication for which it is being studied. The sponsor of a fast track product candidate has opportunities for more frequent interactions with the applicable FDA review team during product development and, once a BLA is submitted, the FDA may consider sections of the application for review on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the application, the FDA agrees to accept sections of the application and determines that the schedule is acceptable and the sponsor pays any required user fees upon submission of the first section of the application. A fast track designated product candidate may also qualify for priority review, under which the FDA sets the target date for FDA action on the BLA at six months after the FDA accepts the application for filing. Priority review is granted pending availability of FDA review resources for the expedited review and when there is evidence that the proposed product would be a significant improvement in the safety or effectiveness of the treatment, diagnosis, or prevention of a serious disease or condition.

A product candidate intended to treat a serious or life-threatening disease or condition may also be eligible for breakthrough therapy designation to expedite its development and review. A product candidate can receive breakthrough therapy designation if preliminary clinical evidence indicates that the product candidate, alone or in combination with one or more other drugs or biologics, may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The designation includes all of the fast track program features, as well as more intensive FDA interaction and guidance beginning as early as Phase 1 and an organizational commitment to expedite the development and review of the product candidate, including involvement of senior managers.

Additionally, depending on the design of the applicable clinical trials, product candidates studied for their safety and effectiveness in treating serious or life-threatening diseases or conditions may be eligible for accelerated approval. Under the accelerated approval program, the FDA may approve a BLA on a determination that the biologic has an effect on either a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of accelerated approval, the FDA generally requires that the sponsor conduct confirmatory clinical trials to verify the biologic's clinical benefit in relationship to the surrogate endpoint or ultimate outcome in relationship to the predicted clinical benefit, and may require that such confirmatory trials be underway prior to granting any accelerated approval. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product. FDA may withdraw approval of a drug or indication approved under accelerated approval on an expedited basis if, for example, the confirmatory trial fails to verify the predicted clinical benefit of the product or the sponsor fails to conduct such confirmatory trials in a timely manner.

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

Fast track designation, priority review, breakthrough therapy designation and RMAT designation do not change the standards for approval but may expedite the development or approval process. Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

Orphan Drug Designation and Exclusivity

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 individuals in the United States, or a patient population greater than 200,000 individuals in the United States and when there is no reasonable expectation that the cost of developing and making available the drug or biologic in the United States will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA.

If a product that has orphan drug designation subsequently receives the first FDA approval for a particular active ingredient within the product for the disease for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a full BLA, to market the same active ingredient for the same disease or condition for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity or if the FDA finds that the holder of the orphan drug exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated. Orphan drug exclusivity does not prevent the FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA application user fee.

A designated orphan drug many not receive orphan drug exclusivity if it is approved for a use that is broader than the disease or condition for which it received orphan designation. In addition, orphan drug exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or, as noted above, if the second applicant demonstrates that its product is clinically superior to the approved product with orphan exclusivity or the manufacturer of the approved product is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

Post-Approval Requirements

Any products manufactured or distributed by us pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to record-keeping, reporting of adverse experiences, periodic reporting, product sampling and distribution, and advertising and promotion of the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims, are subject to prior FDA review and approval. There also are continuing, annual program fees for any marketed products. Biologic manufacturers and their subcontractors 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, which impose certain procedural and documentation requirements upon us and our third-party manufacturers. Changes to the manufacturing process are strictly regulated, and, depending on the significance of the change, may require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting requirements upon us and any third-party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the area of production and quality control to maintain compliance with cGMP and other aspects of regulatory compliance.

The FDA may withdraw approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical studies to assess new safety risks; or imposition of distribution restrictions or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical studies;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of approvals;

- product seizure or detention, or refusal to permit the import or export of products;
- consent decrees, corporate integrity agreements, debarment or exclusion from federal healthcare programs;
- mandated modification of promotional materials and labeling and the issuance of corrective information;
- the issuance of safety alerts, Dear Healthcare Provider letters, press releases and other communications containing warnings or other safety information about the product; or
- injunctions or the imposition of civil or criminal penalties.

The FDA closely regulates the marketing, labeling, advertising and promotion of biologics. A company can make only those claims relating to safety and efficacy, purity and potency that are approved by the FDA and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. Failure to comply with these requirements can result in, among other things, adverse publicity, warning letters, corrective advertising and potential civil and criminal penalties. Physicians may prescribe legally available products for uses that are not described in the product's labeling and that differ from those tested by us and approved by the FDA. Such off-label uses are common across medical specialties. Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, restrict manufacturer's communications on the subject of off-label use of their products.

Biosimilars and Exclusivity

The Affordable Care Act, signed into law in 2010, includes a subtitle called the Biologics Price Competition and Innovation Act of 2009 (the "BPCIA"), which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed reference biological product.

Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency, can be shown through analytical studies, animal studies, and a clinical study or studies. Interchangeability requires that a product is biosimilar to the reference product and the product must demonstrate that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the biologic and the reference biologic may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic.

Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing that applicant's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of its product. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products. At this juncture, it is unclear whether products deemed "interchangeable" by the FDA will, in fact, be readily substituted by pharmacies, which are governed by state pharmacy law.

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

Foreign Regulation

To market any product outside of the United States, we would need to comply with numerous and varying regulatory requirements of other countries regarding safety and efficacy and governing, among other things, clinical trials, marketing authorization, manufacturing, commercial sales and distribution of our products. Because biologically sourced raw materials are subject to unique contamination risks, their use may be restricted in some countries.

Whether or not we obtain FDA approval of a product, we must obtain the requisite approvals from regulatory authorities in foreign countries prior to the commencement of clinical trials or marketing of the product in those countries. The requirements and process governing the conduct of clinical trials, product licensing, pricing and reimbursement vary from country to country. Failure to comply with applicable foreign regulatory requirements, may be subject to, among other things, fines, suspension or withdrawal of regulatory approvals, product recalls, seizure of products, operating restrictions and criminal prosecution.

Non-clinical studies and clinical trials

Similarly to the United States, the various phases of non-clinical and clinical research in the European Union, ("EU"), are subject to significant regulatory controls.

Non-clinical studies are performed to demonstrate the health or environmental safety of new biological substances. Non-clinical (pharmaco-toxicological) studies must be conducted in compliance with the principles of good laboratory practice ("GLP"), as set forth in EU Directive 2004/10/EC (unless otherwise justified for certain particular medicinal products – e.g., radio-pharmaceutical precursors for radio-labelling purposes). In particular, non-clinical studies, both *in vitro* and *in vivo*, must be planned, performed, monitored, recorded, reported and archived in accordance with the GLP principles, which define a set of rules and criteria for a quality system for the organizational process and the conditions for non-clinical studies. These GLP standards reflect the Organization for Economic Co-operation and Development requirements.

Clinical trials of medicinal products in the EU must be conducted in accordance with EU and national regulations and the International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use ("ICH") guidelines on GCPs. Additional GCP guidelines from the European Commission, focusing in particular on traceability, apply to clinical trials of advanced therapy medicinal products ("ATMPs"). If the sponsor of the clinical trial is not established within the EU, it must appoint an entity within the EU to act as its legal representative. The sponsor must take out a clinical trial insurance policy, and in most countries, the sponsor is liable to provide 'no fault' compensation to any study subject injured in the clinical trial.

The regulatory landscape related to clinical trials in the EU has been subject to recent changes. The EU Clinical Trials Regulation ("CTR"), which was adopted in April 2014 and repeals the EU Clinical Trials Directive, became applicable on January 31, 2022. Unlike directives, the CTR is directly applicable in all EU member states without the need for member states to further implement it into national law. The CTR notably harmonizes the assessment and supervision processes for clinical trials throughout the EU via a Clinical Trials Information System, which contains a centralized EU portal and database.

While the EU Clinical Trials Directive required a separate CTA to be submitted in each member state in which the clinical trial takes place, to both the competent national health authority and an independent ethics committee, much like the FDA and IRB respectively, the CTR introduces a centralized process and only requires the submission of a single application for multi-center trials. The CTR allows sponsors to make a single submission to both the competent authority and an ethics committee in each member state, leading to a single decision per member state. The CTA must include, among other things, a copy of the trial protocol and an investigational medicinal product dossier containing information about the manufacture and quality of the medicinal product under investigation. The assessment procedure of the CTA has been harmonized as well, including a joint assessment by all member states concerned, and a separate assessment by each member state with respect to specific requirements related to its own territory, including ethics rules. Each member state's decision is communicated to the sponsor via the centralized EU portal. Once the CTA is approved, clinical study development may proceed.

The CTR foresees a three-year transition period. The extent to which ongoing and new clinical trials will be governed by the CTR varies. Clinical trials for which an application was submitted (i) prior to January 31, 2022 under the EU Clinical Trials Directive, or (ii) between January 31, 2022 and January 31, 2023 and for which the sponsor has opted for the application of the EU Clinical Trials Directive remain governed by said Directive until January 31, 2025. After this date, all clinical trials (including those which are ongoing) will become subject to the provisions of the CTR. Compliance with the CTR requirements by us and our third-party service providers, such as CROs, may impact our developments plans.

Medicines used in clinical trials must be manufactured in accordance with Good Manufacturing Practice ("GMP"). Other national and EU-wide regulatory requirements may also apply.

Marketing authorization

To market a medicinal product in the EU, we must obtain a marketing authorization ("MA"). To obtain regulatory approval of a product candidate under EU regulatory systems, we must submit a MA application ("MAA"). The process for doing this depends, among other things, on the nature of the medicinal product. There are two types of MAs:

- "Centralized MAs" are issued by the European Commission through the centralized procedure, based on the opinion of the Committee for Medicinal Products for Human Use ("CHMP") of the European Medicines Agency ("EMA") and are valid throughout the EU. The centralized procedure is mandatory for certain types of products, such as (i) medicinal products derived from biotechnology processes, (ii) designated orphan medicinal products, (iii) ATMPs (such as gene therapy, somatic cell therapy and tissue engineered products), and (iv) medicinal products containing a new active substance indicated for the treatment certain diseases, such as HIV/AIDS, cancer, neurodegenerative disorders, diabetes, auto immune and other immune dysfunctions and viral diseases. The centralized procedure is optional for products containing a new active substance not yet authorized in the EU, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU. Under the centralized procedure, the maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops. Accelerated evaluation might be granted by the CHMP in exceptional cases when a medicinal product is of major interest from the point of view of public health and in particular from the viewpoint of therapeutic innovation. If the CHMP accepts such request, the time limit of 210 days will be reduced to 150 days but it is possible that the CHMP can revert to the standard time limit for the centralized procedure if it considers that it is no longer appropriate to conduct an accelerated assessment.
- "Conditional MAs" may be granted in cases where all the required safety and efficacy data are not yet available. The conditional MA is subject to conditions to be fulfilled for generating the missing data or ensuring increased safety measures. It is valid for one year and has to be renewed annually until fulfillment of all the conditions. Once the pending studies are provided, it can become a "standard" MA. However, if the conditions are not fulfilled within the timeframe set by the EMA, the MA ceases to be renewed. Furthermore, MAs may also be granted "under exceptional circumstances" when the applicant can show that it is unable to provide comprehensive data on the efficacy and safety under normal conditions of use even after the product has been authorized and subject to specific procedures being introduced. This may arise in particular when the intended indications are very rare and, in the present state of scientific knowledge, it is not possible to provide comprehensive information, or when generating data may be contrary to generally accepted ethical principles. This MA is close to the conditional MA as it is reserved to medicinal products to be approved for severe diseases or unmet medical needs and the applicant does not hold the complete data set legally required for the grant of a MA. However, unlike the conditional MA, the applicant does not have to provide the missing data and will never have to. Although the MA "under exceptional circumstances" is granted definitively, the risk-benefit balance of the medicinal product is reviewed annually and the MA is withdrawn in case the risk-benefit ratio is no longer favorable.
- "National MAs", are issued by the competent authorities of EU member states and only cover their respective territory, and are available for products not falling within the mandatory scope of the centralized procedure. Where a product has already been authorized for marketing in an EU member state, this national MA can be recognized in another member state through the mutual recognition procedure. If the product has not received a national MA in any member state at the time of application, it can be approved simultaneously in various member states through the decentralized procedure. Under the decentralized procedure an identical dossier is submitted to the competent authority of each of the member states in which the MA is sought, one of which is selected by the applicant as the reference member state.

Under the above described procedures, in order to grant the MA, the EMA or the competent authorities of the EU member states make an assessment of the risk benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy. MAs have an initial duration of five years. After these five years, the authorization may be renewed on the basis of a reevaluation of the risk-benefit balance.

Priority medicines scheme

Innovative products that target an unmet medical need and are expected to be of major public health interest may be eligible for a number of expedited development and review programs, such as the so-called PRIority MEdicines ("PRIME") scheme, which provides incentives similar to the breakthrough therapy designation in the U.S. PRIME was launched in 2016 by the EMA to support the development and accelerate the review of new therapies to treat patients with unmet medical need. This voluntary scheme is based on enhanced interaction and early dialogue with developers of promising medicines, to optimize development plans and speed up evaluation so these medicines can reach patients earlier. To qualify for PRIME, product candidates require early clinical evidence that the therapy has the potential to offer a therapeutic advantage over existing treatments or benefits patients without treatment options. Product developers that benefit from PRIME designation can expect to be eligible for accelerated assessment but this is not guaranteed. Many benefits accrue to sponsors of product candidates with PRIME designation, including but not limited to, early and proactive regulatory dialogue with the EMA, frequent discussions on clinical trial designs and other development program elements,

and accelerated MAA assessment once a dossier has been submitted. Importantly, a dedicated contact and rapporteur from the CHMP is appointed early in the PRIME scheme facilitating increased understanding of the product at EMA's committee level. An initial meeting initiates these relationships and includes a team of multidisciplinary experts at the EMA to provide guidance on the overall development and regulatory strategies. Innovative medicines fulfilling a medical need may also benefit from different types of fast track approvals, such as a conditional marketing authorization or a marketing authorization under exceptional circumstances granted on the basis of less comprehensive clinical data than normally required (respectively in the likelihood that the sponsor will provide such data within an agreed timeframe or when comprehensive data cannot be obtained even after authorization).

Advanced therapy classification

Based on legislation adopted in 2007, the EMA established an additional regulatory designation for products classified as an ATMP. The ATMP designation offers sponsors a variety of benefits similar to those associated with the PRIME scheme, including scientific and regulatory guidance, additional opportunities for dialogue with regulators, and presubmission review and certification of the CMC and nonclinical data proposed for submission in a forthcoming MA applications for micro-, small-, or medium-sized enterprises. To qualify for this designation, product candidates intended for human use must be based on gene therapy, somatic cell therapy, or tissue engineered therapy.

Data and marketing exclusivity

In the EU, new products authorized for marketing, or reference products, generally receive eight years of data exclusivity and an additional two years of market exclusivity upon MA. The data exclusivity period prevents generic or biosimilar applicants from relying on the pre-clinical and clinical trial data contained in the dossier of the reference product when applying for a generic or biosimilar MA in the EU during a period of eight years from the date on which the reference product was first authorized in the EU. The market exclusivity period prevents a successful generic or biosimilar applicant from commercializing its product in the EU until 10 years have elapsed from the initial authorization of the reference product in the EU. The 10-year market exclusivity period can be extended to a maximum of eleven years if, during the first eight years of those 10 years, the MA holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to their authorization, are held to bring a significant clinical benefit in comparison with existing therapies.

There is a special regime for biosimilars, or biological medicinal products that are similar to a reference medicinal product but that do not meet the definition of a generic medicinal product, for example, because of differences in raw materials or manufacturing processes. For such products, the results of appropriate preclinical or clinical trials must be provided, and guidelines from the EMA detail the type of quantity of supplementary data to be provided for different types of biological product. There are no such guidelines for complex biological products, such as gene or cell therapy medicinal products, and so it is unlikely that biosimilars of those products will currently be approved in the EU. However, guidance from the EMA states that they will be considered in the future in light of the scientific knowledge and regulatory experience gained at the time.

Pediatric development

In the EU, MAAs for new medicinal products have to include the results of studies conducted in the pediatric population, in compliance with a pediatric investigation plan ("PIP"), agreed with the EMA's Pediatric Committee ("PDCO"). The PIP sets out the timing and measures proposed to generate data to support a pediatric indication of the drug for which marketing authorization is being sought. The PDCO can grant a deferral of the obligation to implement some or all of the measures of the PIP until there are sufficient data to demonstrate the efficacy and safety of the product in adults. Further, the obligation to provide pediatric clinical trial data can be waived by the PDCO when these data are not needed or appropriate because the product is likely to be ineffective or unsafe in children, the disease or condition for which the product is intended occurs only in adult populations, or when the product does not represent a significant therapeutic benefit over existing treatments for pediatric patients. Once the MA is obtained in all EU member states and study results are included in the product information, even when negative, the product is eligible for six months' supplementary protection certificate extension (if any is in effect at the time of authorization) or, in the case of orphan products, a two year extension of the orphan market exclusivity.

Orphan Medicinal Products

In the EU, a medicinal product can be designated as an orphan if its sponsor can establish that (1) the product is intended for the diagnosis, prevention or treatment of a life-threatening or chronically debilitating condition; and (2) either (a) such condition affects not more than five in ten thousand persons in the EU when the application is made, or (b) without incentives, it is unlikely that the marketing of the product in the EU would generate sufficient return to justify the necessary investment; and (3) there exists no satisfactory method of diagnosis, prevention or treatment of the condition in question that has been authorized in the EU or, if such method exists, the product will be of significant benefit to those affected by that condition.

In the EU, an application for designation as an orphan product can be made any time prior to the filing of a MAA. Orphan designation entitles a party to incentives such fee reductions or fee waivers, protocol assistance, and access to the centralized procedure.

Upon grant of a MA, orphan medicinal products are entitled to a ten-year period of market exclusivity for the approved therapeutic indications, which means the competent authorities, cannot accept another application for a MA, or grant a MA, or accept an application to extend a MA for a similar medicinal product for the same indication for a period of ten years. The period of market exclusivity is extended by two years for orphan medicinal products that have also complied with an agreed PIP. No extension to any supplementary protection certificate can be granted on the basis of pediatric studies for orphan indications.

The orphan exclusivity period may, however, be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan designation, for example because the product is sufficiently profitable not to justify market exclusivity, or where the prevalence of the condition has increased above the threshold. Granting of an authorization for another similar orphan medicinal product where another product has market exclusivity can happen at any time if: (i) the second applicant can establish that its product, although similar to the authorized product, is safer, more effective or otherwise clinically superior, (ii) inability of the applicant to supply sufficient quantities of the orphan medicinal product or (iii) where the applicant consents to a second orphan medicinal product application. A company may voluntarily remove a product from the orphan register.

Orphan designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

Post-Approval Requirements

Similar to the United States, both MA holders and manufacturers of medicinal products are subject to comprehensive regulatory oversight by the EMA, the European Commission and/or the competent regulatory authorities of the member states. The holder of a MA must establish and maintain a pharmacovigilance system and appoint an individual qualified person for pharmacovigilance ("QPPV") who is responsible for the establishment and maintenance of that system, and oversees the safety profiles of medicinal products and any emerging safety concerns. Key obligations include expedited reporting of suspected serious adverse reactions and submission of periodic safety update reports ("PSURs").

All new MAAs must include a risk management plan ("RMP") describing the risk management system that the company will put in place and documenting measures to prevent or minimize the risks associated with the product. The regulatory authorities may also impose specific obligations as a condition of the MA. Such risk-minimization measures or post-authorization obligations may include additional safety monitoring, more frequent submission of PSURs, or the conduct of additional clinical trials or post-authorization safety studies.

The advertising and promotion of medicinal products is also subject to laws concerning promotion of medicinal products, interactions with physicians, misleading and comparative advertising and unfair commercial practices. All advertising and promotional activities for the product must be consistent with the approved summary of product characteristics, and therefore all off-label promotion is prohibited. Direct-to-consumer advertising of prescription medicines is also prohibited in the EU. Although general requirements for advertising and promotion of medicinal products are established under EU directives, the details are governed by regulations in each member state and can differ from one country to another.

The aforementioned EU rules are generally applicable in the European Economic Area, or EEA, which consists of the 27 EU member states plus Norway, Liechtenstein and Iceland.

Failure to comply with EU and member state laws that apply to the conduct of clinical trials, manufacturing approval, MA of medicinal products and marketing of such products, both before and after grant of the MA, manufacturing of pharmaceutical products, statutory health insurance, bribery and anti-corruption or with other applicable regulatory requirements may result in administrative, civil or criminal penalties. These penalties could include delays or refusal to authorize the conduct of clinical trials, or to grant MA, product withdrawals and recalls, product seizures, suspension, withdrawal or variation of the MA, total or partial suspension of production, distribution, manufacturing or clinical trials, operating restrictions, injunctions, suspension of licenses, fines and criminal penalties.

Brexit and the Regulatory Framework in the United Kingdom

Since the end of the Brexit transition period on January 1, 2021, Great Britain ("GB") (England, Scotland and Wales) has not been directly subject to EU laws, however under the terms of the Ireland/Northern Ireland Protocol, EU laws generally apply to Northern Ireland. The EU laws that have been transposed into United Kingdom ("UK") law through secondary legislation remain applicable in GB. However, new legislation such as the (EU) CTR is not applicable in GB.

The UK Medicines and Medical Devices Act 2021, has introduced delegated powers in favor of the Secretary of State or an 'appropriate authority' to amend or supplement existing regulations in the area of medicinal products and medical devices. This allows new rules to be introduced in the future by way of secondary legislation, which aims to allow flexibility in addressing regulatory gaps and future changes in the fields of human medicines, clinical trials and medical devices.

Since January 1, 2021, the Medicines and Healthcare products Regulatory Agency ("MHRA"), has been the UK's standalone medicines and medical devices regulator. As a result of the Northern Ireland protocol, different rules will apply in Northern Ireland than in GB; broadly, Northern Ireland will continue to follow the EU regulatory regime, but its national competent authority will remain the MHRA.

The MHRA has introduced changes to national licensing procedures, including procedures to prioritize access to new medicines that will benefit patients, including a 150-day assessment and a rolling review procedure. All existing EU MAs for centrally authorized products were automatically converted or grandfathered into UK MAs, effective in GB (only), free of charge on January 1, 2021, unless the MA holder chooses to opt-out. In order to use the centralized procedure to obtain a MA that will be valid throughout the EEA, companies must be established in the EEA. Therefore after Brexit, companies established in the UK can no longer use the EU centralized procedure and instead an EEA entity must hold any centralized MAs. In order to obtain a UK MA to commercialize products in the UK, an applicant must be established in the UK and must follow one of the UK national authorization procedures or one of the remaining post-Brexit international cooperation procedures to obtain an MA to commercialize products in the UK. The MHRA has been able to rely on a decision taken by the European Commission on the approval of a new (centralized procedure) MA when determining an application for a Great Britain MA (the European Commission Decision Reliance Procedure ("ECDRP")); or use the MHRA's mutual recognition or decentralized procedures ("MRDCRP") which enabled MAs approved in EU member states (or Iceland, Liechtenstein, Norway) to be granted in GB. Since January 1, 2024, the new International Recognition procedure ("IRP") has replaced the ECDRP which allows the MHRA to conduct targeted assessments by recognizing approvals from trusted partner agencies such as the European Commission. The MRDCRP is also incorporated under the umbrella of the IRP. Additionally, the 'Unfettered Access Procedure' enables an MA holder in Northern Ireland to seek recognition in GB.

There is no pre-MA orphan designation. Instead, the MHRA will review applications for orphan designation in parallel to the corresponding MA application. The criteria are essentially the same, but have been tailored for the market, i.e., the prevalence of the condition in GB, rather than the EU, must not be more than five in 10,000. Should an orphan designation be granted, the period or market exclusivity will be set from the date of first approval of the product in GB.

The UK regulatory framework in relation to clinical trials is derived from existing EU legislation (as implemented into UK law, through secondary legislation). On January 17, 2022, the MHRA launched an eight-week consultation on reframing the UK legislation for clinical trials, which aimed to streamline clinical trials approvals, enable innovation, enhance clinical trials transparency, enable greater risk proportionality, and promote patient and public involvement in clinical trials. The MHRA published its consultation outcome on March 21, 2023 in which it confirmed that it would update the existing legislation. The resulting legislative changes, which are yet to be published, will ultimately determine the extent to which the UK regulations align with the (EU) CTR. Under the terms of the Protocol on Ireland and Northern Ireland, provisions of the (EU) CTR which relate to the manufacture and import of investigational medicinal products and auxiliary medicinal products currently apply in Northern Ireland.

Other Healthcare Laws and Compliance Requirements

In the United States, our activities are potentially subject to regulation under various federal and state healthcare laws including, among others, the federal Anti-Kickback Statute, the federal False Claims Act and HIPAA. Similar laws exist in foreign jurisdictions including the EU, as well.

The U.S. federal Anti-Kickback Statute prohibits, among other things, any person or entity, from knowingly and willfully offering, paying, soliciting or receiving any remuneration, directly or indirectly, overtly or covertly, in cash or in kind, to induce or in return for purchasing, leasing, ordering or arranging for the purchase, lease or order of any item or service reimbursable under Medicare, Medicaid or other federal healthcare programs. The term remuneration has been interpreted broadly to include anything of value. A person does not need to have knowledge of the statute or specific intent to violate it to have committed a violation.

The U.S. federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalties laws, prohibit, among other things, any person or entity from knowingly presenting, or causing to be presented, a false claim for payment to, or approval by, the federal government or knowingly making, using, or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. government. In addition, the government may assert that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act.

The U.S. Health Insurance Portability and Accountability Act of 1996, or HIPAA, created additional federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud or to obtain, by means of false or fraudulent pretenses, representations or promises, any money or property owned by, or under the control or custody of, any healthcare benefit program, including private third-party payors and knowingly and willfully falsifying, concealing or covering up by trick, scheme or device, a material fact or making any materially false, fictitious or fraudulent statement in connection with the delivery of or payment for healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation.

Additionally, the federal Physician Payments Sunshine Act, and its implementing regulations, require that certain manufacturers of drugs, devices, biological and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to CMS information related to certain payments or other transfers of value made or distributed to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain non-physician practitioners including physician assistants and nurse practitioners, and teaching hospitals, or to entities or individuals at the request of, or designated on behalf of, the physicians and teaching hospitals and to report annually to CMS certain ownership and investment interests held by physicians and their immediate family members.

Moreover, analogous state and foreign laws and regulations may apply to our activities, such as state anti-kickback and false claims laws, which may apply to our business practices, including, but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, or by the patients themselves, state laws that require pharmaceutical and device companies to comply with the industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources, state and local laws and regulations that require manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures and pricing information, and state and local laws which require the registration of pharmaceutical sales representatives.

Efforts to ensure that current and future business arrangements with third parties comply with applicable healthcare laws and regulations involves substantial costs. If a business is found to be in violation of any of these or any other health regulatory laws that may apply to it, it may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, individual imprisonment, possible exclusion from participation in Medicare, Medicaid and other U.S. healthcare programs, additional reporting requirements and oversight if subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, contractual damages, reputational harm, diminished profits and future earnings, and curtailment or restructuring of operations.

Coverage, Pricing and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status for newly approved therapeutics. 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 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. For products administered under the supervision of a physician, obtaining coverage and adequate reimbursement may be particularly difficult because of the higher prices often associated with such drugs. A payor's decision to provide coverage for a product does not imply that an adequate reimbursement rate will be approved. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage for the product. Moreover, the coverage provided may be more limited than the purposes for which the product is approved by the FDA. It is also possible that a third-party payor may consider a product as substitutable and only offer to reimburse patients for the less expensive product. Adequate third-party payor reimbursement may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development. Coverage policies and third-party payor 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.

In the EU, governments influence the price of products through their pricing and reimbursement rules and control of national health care systems that fund a large part of the cost of those products to consumers. Member states are free to restrict the range of pharmaceutical products for which their national health insurance systems provide reimbursement, and to control the prices and reimbursement levels of pharmaceutical products for human use. Some jurisdictions operate positive and negative list systems under which products may only be marketed once a reimbursement price has been agreed to by the government. Member states may approve a specific price or level of reimbursement for the pharmaceutical product, or alternatively adopt a system of direct or indirect controls on the profitability of the company responsible for placing the pharmaceutical product on the market, including volume-based arrangements, caps and reference pricing mechanisms. To obtain reimbursement or pricing approval, some of these countries may

require the completion of clinical trials that compare the cost effectiveness of a particular product candidate to currently available therapies. Other member states allow companies to fix their own prices for medicines, but monitor and control company profits. The downward pressure on health care costs in general, particularly prescription products, has become very intense. As a result, increasingly high barriers are being erected to the entry of new products. In addition, in some countries, cross border imports from low-priced markets exert a commercial pressure on pricing within a country.

Healthcare Reform

In the United States and some foreign jurisdictions, there have been, and continue to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of product candidates, restrict or regulate post-approval activities, and affect the ability to profitably sell product candidates for which marketing approval is obtained. Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively the ACA, enacted in March 2010, has substantially changed healthcare financing and delivery by both governmental and private insurers. Among other things the ACA included the following provisions:

- an annual, nondeductible fee on any entity that manufactures or imports certain specified branded prescription drugs and biologic agents apportioned among these entities according to their market share in some government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program;
- a new Medicare Part D coverage gap discount program, in which manufacturers must now agree to point-of-sale discounts of 70% off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturers' outpatient drugs to be covered under Medicare Part D;
- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs;
- expansion of the entities eligible for discounts under the 340B Drug Discount Program;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;
- 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; and
- a licensure framework for follow on biologic products.

Since its enactment, there have been judicial, administrative, executive, and legislative challenges to certain aspects of the ACA. On June 17, 2021, the U.S. Supreme Court (the "Supreme Court") dismissed the most recent judicial challenge to the ACA brought by several states on procedural grounds without specifically ruling on the constitutionality of the ACA. Thus, the ACA will remain in effect in its current form.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. On August 2, 2011, the Budget Control Act of 2011 was signed into law, which, among other things, included reductions to Medicare payments to providers, which went into effect on April 1, 2013 and, due to subsequent legislative amendments to the statute will remain in effect through 2032, with the exception of a temporary suspension from May 1, 2020 through March 31, 2022, unless additional Congressional action is taken. On January 2, 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, reduced Medicare payments to several providers, including hospitals, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Finally, there has been heightened governmental scrutiny recently over 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, rebates and price negotiation for pharmaceutical products. On August 16, 2022, the Inflation Reduction Act of 2022, or IRA, was signed into law, which among other things, requires manufacturers of certain drugs to engage in price negotiations with Medicare (beginning in 2026), with prices that can be negotiated subject to a cap; imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation (first due in 2023); and replaces the Part D coverage gap discount program with a new discounting program (beginning in 2025). The IRA permits the Secretary of the Department of Health and Human Services ("HHS") to implement many of these provisions through guidance, as opposed to regulation, for the initial years. On August 29, 2023, HHS announced the list of the first ten drugs that will be subject to price negotiations. HHS has issued and will continue to issue guidance implementing the IRA, although the Medicare drug price negotiation program is currently subject to legal challenges. While the impact of the IRA on the pharmaceutical industry cannot yet be fully determined, it is likely to be significant.

At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical product and medical device 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 medical devices to purchase and which suppliers will be included in their prescription drug and other healthcare programs.

In the EU, on December 13, 2021, Regulation No. 2021/2282 (the "Regulation") on Health Technology Assessment ("HTA") was adopted. While the Regulation entered into force in January 2022, it will only begin to apply from January 2025 onwards, with preparatory and implementation-related steps to take place in the interim. Once applicable, it will have a phased implementation depending on the concerned products. The Regulation intends to boost cooperation among EU member states in assessing health technologies, including new medicinal products, and provide the basis for cooperation at the EU level for joint clinical assessments in these areas. It will permit EU member states to use common HTA tools, methodologies, and procedures across the EU, working together in four main areas, including joint clinical assessment of the innovative health technologies with the highest potential impact for patients, joint scientific consultations whereby developers can seek advice from HTA authorities, identification of emerging health technologies to identify promising technologies early, and continuing voluntary cooperation in other areas. Individual EU member states will continue to be responsible for assessing non-clinical (e.g., economic, social, ethical) aspects of health technology, and making decisions on pricing and reimbursement.

Data Privacy and Security

Numerous state, federal and foreign laws, including consumer protection laws and regulations, govern the collection, dissemination, use, access to, confidentiality and security of personal information, including health-related information. In the United States, numerous federal and state laws and regulations, including data breach notification laws, health information privacy and security laws, and consumer protection laws and regulations, that govern the collection, use, disclosure, and protection of health-related and other personal information could apply to our operations or the operations of our partners. In addition, certain foreign laws, govern the privacy and security of personal information, including health-related information in certain circumstances, and many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts. Failure to comply with these laws, where applicable, can result in the imposition of significant civil and/or criminal penalties and private litigation. Privacy and security laws, regulations, and other obligations are constantly evolving, may conflict with each other to complicate compliance efforts, and can result in investigations, proceedings, or actions that lead to significant civil and/or criminal penalties and restrictions on data processing.

Human Capital

We are a purpose driven organization, and we have carefully cultivated a culture that values innovation, accountability, respect, adaptability and perseverance. We strive to create an open, collaborative workplace that empowers Precisioneers to be their authentic selves and deliver meaningful and inspiring work. We strongly believe that our shared values empower our team to better navigate and overcome challenges we may experience as we pursue our mission of improving life through genome editing. Through our diverse hiring and talent development practices with a focus on inclusion, we have recruited and successfully retained world class talent with industry leading experience in genome editing. We will continue to build on these critical capabilities to successfully impact the patients we ultimately wish to serve. We believe that all Precisioneers are inspired by developing high quality research and have a passion to translate their work into therapies dedicated to improving life.

Dedicated to improving life isn't just a statement supporting the products that we are developing – it is a statement that speaks to our collective desire to do our part in improving the lives of those around us. Through our Diversity and Inclusion initiatives, we are actively fostering an environment that attracts the best talent, values diversity of life experiences and perspectives, and encourages innovation in pursuit of our mission. Through guest lectures, trainings, educational events, community outreach, and other activities, we are supporting a workplace that reflects and embraces the gender, race, ethnicity, sexual orientation, age, physical ability, as well as all cultural backgrounds in our community. As of January 30, 2024, our workforce was self-reportedly approximately 50% female and approximately 24% Asian, Black, Latinx, two or more races, or not defined. Our senior leadership team and department heads were self-reportedly approximately 33% female and 24% Asian or Black as of January 30, 2024.

Notable benefits we offer to our full-time Precisioneers include:

- employer sponsored health insurance;
- employer 401(k) matching contributions;
- generous paid time off policies;
- wellness programs including employee assistance programs, wellness reimbursement, and an on-site gym; and
- professional development programs including a tuition reimbursement program.

As of December 31, 2023, we had 109 full-time Precisioneers. Of these full-time employees, 78 are engaged in research and development activities and 29 have Ph.D. or M.D. degrees. None of our employees are represented by a labor union or covered by a collective bargaining agreement.

Corporate Information

We were incorporated in Delaware in January 2006. Our principal executive offices are located at 302 East Pettigrew St., Suite A-100, Durham, North Carolina 27701, and our telephone number is (919) 314-5512. Our website address is www.precisionbiosciences.com. The information contained in, or accessible through, our website does not constitute a part of this Annual Report on Form 10-K.

Available Information

We file annual, quarterly and current reports, proxy statements and other information with the U.S. Securities and Exchange Commission ("SEC"). Our SEC filings are available to the public over the Internet at the SEC's website at *www.sec.gov*. Our SEC filings are also available free of charge under the Investors and Media section of our website at *www.precisionbiosciences.com* as soon as reasonably practicable after they are filed with or furnished to the SEC. Our website and the information contained on or connected to that site are not incorporated into this Annual Report on Form 10-K.

We may use our website as a distribution channel of material information about the Company. Financial and other important information regarding the Company is routinely posted on and accessible through the Investors and Media section of our website at *www.precisionbiosciences.com*. In addition, you may automatically receive email alerts and other information about the Company when you enroll your email address by visiting the "Email Alerts" option under Investor Tools of the Investors and Media section of our website at *www.precisionbiosciences.com*.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. Before investing in our common stock, you should consider carefully the risks described below, together with the other information included or incorporated by reference in this Annual Report on Form 10-K. The occurrence of any of the following risks could materially adversely affect our business, financial condition, results of operations and future growth prospects. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to Our Financial Condition, Limited Operating History and Need for Additional Capital

We have incurred significant operating losses since our inception and expect to continue to incur losses for the foreseeable future. We have not been profitable and may not achieve or maintain profitability.

We do not expect to be profitable in the foreseeable future. Since inception, we have incurred significant operating losses. If our product candidates are not successfully developed and approved, we may never generate any revenue from product sales. Our net loss was $61.3 million for the year ended December 31, 2023. As of December 31, 2023, we had an accumulated deficit of $489.6 million.

In addition, we have not commercialized any products and have never generated any revenue from product sales. Substantially all of our losses have resulted from expenses incurred in connection with our research and development activities, including our preclinical development activities, and from general and administrative costs associated with our operations. We have financed our operations primarily through proceeds from upfront and milestone payments from collaboration and licensing agreements, our IPO, private placements of our common stock, convertible preferred stock and convertible debt financings, underwritten and at-the-market ("ATM") offerings of common stock, and borrowings on credit facilities. The amount of our future net losses will depend, in part, on the amount and growth rate of our expenses and our ability to generate revenues.

All of our current or future product candidates will require substantial additional development time and resources before we may realize revenue from product sales, if at all. We expect to continue to incur significant expenses and operating losses for the foreseeable future. We anticipate our expenses will increase if and as we:

- continue our current research and development programs, including conducting laboratory and preclinical studies for product candidates;
- initiate potential clinical trials for product candidates;
- seek to identify, assess, acquire or develop additional research programs or product candidates;
- maintain, expand and protect our intellectual property portfolio;
- seek marketing approvals for any product candidates that may successfully complete development;
- establish a sales, marketing and distribution infrastructure to commercialize any products that may obtain marketing approval;
- change or add additional manufacturers or suppliers of biological materials or product candidates;
- further develop our genome editing technology;
- acquire or in-license other technologies;
- seek to attract new and retain existing personnel;
- expand our facilities; and
- incur increased costs as a result of operating as a public company.

It will be several years, if ever, before we obtain regulatory approval for, and are ready for commercialization of, a therapeutic product candidate. Even if a therapeutic product candidate receives regulatory approval, future revenues for such product candidate will depend upon many factors, such as, as applicable, the size of any markets in which such product candidate is approved for sale, the market share captured by such product candidate, including as a result of the market acceptance of such product candidate and the effectiveness of manufacturing, sales, marketing and distribution operations related to such product candidate, the terms of any collaboration, license, or other strategic arrangement we may have with respect to such product candidate and levels of reimbursement from third-party payors. If we are unable to develop and commercialize one or more product candidates either alone or with collaborators, or if revenues from any product candidate that receives marketing approval or is commercialized are insufficient, we may not achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability. If we are unable to achieve and maintain profitability, the value of our common stock will be materially adversely affected.

We will need substantial additional funding, and if we are unable to raise a sufficient amount of capital when needed on acceptable terms, or at all, we may be forced to delay, reduce or eliminate some or all of our research programs, product development activities and commercialization efforts.

The process of identifying product candidates and conducting preclinical studies and potential clinical trials is time-consuming, expensive, uncertain and takes years to complete. We expect our expenses to increase in connection with our ongoing activities, particularly as we identify, continue the research and development of, initiate potential clinical trials of, and seek marketing approval for, product candidates. In addition, if any therapeutic product candidate that we develop alone or with collaborators obtains marketing approval, we may incur significant commercialization expenses related to product manufacturing, sales, marketing and distribution

efforts. Furthermore, we have incurred, and expect to continue to incur, additional costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to obtain sufficient funding on a timely basis or on favorable terms, we may be required to significantly delay, alter, reduce, or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan or growth strategy, or capitalize on business opportunities as desired. Any of these events could materially adversely affect our financial condition and business prospects.

We believe that, as of the date of this Annual Report on Form 10-K, existing cash and cash equivalents, expected operational receipts, including upfront and potential near-term consideration to be received from TG Therapeutics and other licensees, operational efficiencies gained from divestment of our historical CAR T operations, and availability of our ATM facility will be sufficient to fund our operating expenses and capital expenditure requirements into the second half of 2026. We expect our cash runway to be sufficient to achieve first-in-human Phase 1 clinical data for PBGENE-HBV and PBGENE-PMM. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect. Our operating plans and other demands on our cash resources may change as a result of many factors, including factors unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations and licensing arrangements.

Attempting to secure additional financing may divert our management from our day-to-day activities, which may adversely affect our ability to develop product candidates. Our future capital requirements will depend on many factors, including:

- the timing, scope, progress, costs, results and analysis of results of research activities, preclinical studies and potential clinical trials for any of our product candidates;
- the costs of future activities, including product manufacturing, sales, marketing and distribution activities for any product candidates that receive regulatory approval;
- the success of our existing collaborative and other out-licensing relationships;
- the extent to which we exercise any development or commercialization rights under collaborative relationships;
- our ability to establish and maintain additional collaborative or other out-licensing relationships on favorable terms, or at all;
- the extent to which we expand our operations and the timing of such expansion, including with respect to facilities, employees and product development platforms;
- the costs of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property and proprietary rights and defending intellectual property-related claims;
- the extent to which we acquire or in-license other technologies or product candidates;
- the extent to which we acquire or invest in other businesses;
- the costs of continuing to operate as a public company; and
- the amount of revenues, if any, received from commercial sales of any products that we develop alone or with collaborators that receive regulatory approval.

Even if we believe we have sufficient funds for our current or future operating plans, we may continue to seek additional capital if market conditions are favorable or in light of specific strategic considerations. Adequate additional financing may not be available to us on acceptable terms, or at all. In addition, SEC regulations limit the amount that companies with a public float of less than $75 million may raise during any 12-month period pursuant to a shelf registration statement on Form S-3.

Provisions of our debt instruments may restrict our ability to pursue our business strategies, and our ability to access credit on favorable terms, if necessary, for the funding of our operations, trials and programs may be limited due to changes in credit markets.

In May 2019, we entered into a loan and security agreement with Pacific Western Bank ("PWB") (as subsequently amended, the "Revolving Line"). Pursuant to the terms of the Revolving Line, we may request advances on a revolving line of credit of up to an aggregate principal amount of $30.0 million and the maturity date of the Revolving Line is June 23, 2024. As of December 31, 2023, we had $22.5 million in borrowings under our Revolving Line. Pursuant to the terms of the Revolving Line, we granted PWB a security interest in substantially all of our assets, excluding any of the intellectual property now or hereafter owned, acquired or received by us (but including any rights to payment from the sale or licensing of any such intellectual property).

The Revolving Line requires us, and any debt instruments we may enter into in the future may require us, to comply with various covenants that limit our ability to, among other things:

- dispose of assets;
- change our name, location, executive office or executive management, business, fiscal year, or control;
- complete mergers or acquisitions;
- incur indebtedness;
- encumber assets;
- pay dividends or make other distributions to holders of our capital stock;
- make specified investments;
- make capitalized expenditures in excess of $40 million in the aggregate during each fiscal year;
- maintain less than $10.0 million of unrestricted cash at PWB; and
- engage in certain transactions with our affiliates.

These restrictions could inhibit our ability to pursue our business strategies. In addition, we are subject to financial covenants based on minimum cash balances.

Additionally, the credit markets and the financial services industry have been experiencing disruption characterized by the bankruptcy, failure, collapse or sale of various financial institutions, increased volatility in securities prices, diminished liquidity and credit availability and intervention from the U.S. and other governments. As a result, the cost and availability of credit has been and may continue to be adversely affected. We cannot be certain that funding under our Revolving Line will be available from PWB and the credit markets generally when and as needed, and if available, on acceptable terms if at all. If we are unable to obtain funding when needed and on acceptable terms, our financial condition and business prospects could be adversely impacted.

Raising additional capital may cause dilution to our stockholders, restrict our operations, or require us to relinquish rights to our technologies or product candidates.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity and/or debt financings and collaborations, licensing agreements or other strategic arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, including in underwritten and ATM offerings, stockholders' ownership interest will be diluted, and the terms of such securities may include liquidation or other preferences that adversely affect common stockholders' rights. To the extent that we raise additional capital through debt financing, it would result in increased fixed payment obligations and a portion of our operating cash flows, if any, being dedicated to the payment of principal and interest on such indebtedness. In addition, debt financing may involve agreements that include restrictive covenants that impose operating restrictions, such as restrictions on the incurrence of additional debt, the making of certain capital expenditures or the declaration of dividends. To the extent we raise additional capital through arrangements with collaborators or otherwise, we may be required to relinquish some of our technologies, research programs, product development activities, product candidates and/or future revenue streams, license our technologies and/or product candidates on unfavorable terms or otherwise agree to terms unfavorable to us. Furthermore, any capital

raising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to advance research programs, product development activities or product candidates.

We have a limited operating history, which makes it difficult to evaluate our current business and future prospects and may increase the risk of your investment.

We are a genome editing company with a limited operating history. We formed our company in 2006 and spent the first nine years of our company's history developing and refining our core technology, and only during the past several years have we focused our efforts on advancing the development of product candidates.

Investment in biopharmaceutical product development is a highly speculative endeavor. It entails substantial upfront capital expenditures, and there is significant risk that any product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, obtain any required regulatory approvals or become commercially viable. Our genome editing platform and the technologies we are using are new and unproven. We have not yet demonstrated an ability to successfully complete any clinical trials, obtain any required marketing approvals, manufacture products, conduct sales, marketing and distribution activities, or arrange for a third party to do any of the foregoing on our behalf. Consequently, any predictions made about our future success or viability may not be as accurate as they could be if we had a history of successfully developing and commercializing products.

Additionally, we encounter risks and difficulties frequently experienced by new and growing companies in rapidly developing and changing industries, particularly the nascent and swiftly evolving gene editing field, including challenges in forecasting accuracy, determining appropriate investments of our limited resources, gaining market acceptance of our technology, managing a complex regulatory landscape and developing new product candidates, which may make it more difficult to evaluate our likelihood of success. Our current operating model may require changes in order for us to adjust to these challenges or scale our operations efficiently. Our limited operating history, particularly in light of the rapidly evolving nature of the biopharmaceutical industry and the genome editing field, may make it difficult to evaluate our technology and business prospects or to predict our future performance. Additionally, due to the stage of our operations, we expect that our financial condition and operating results may fluctuate significantly from quarter to quarter as a result of many factors as we build our business, and you should not rely upon the results of any particular quarterly or annual period as indications of future operating performance.

We may expend our limited resources on pursuing particular research programs or product candidates that may be less successful or profitable than other programs or product candidates.

Research programs to identify new product candidates and product development platforms require substantial technical, financial and human resources. We are continually evaluating our business strategy and may modify this strategy in light of developments in our business and other factors. We may focus our efforts and resources on potential programs, product candidates or product development platforms that ultimately prove to be unsuccessful. Any time, effort and financial resources we expend on identifying and researching new product candidates and product development platforms may divert our attention from, and adversely affect our ability to continue, development and commercialization of existing research programs, product candidates and product development platforms. Clinical trials of any of our product candidates may never commence despite the expenditure of significant resources in pursuit of their development, and our spending on current and future research and development programs, product candidates and product development platforms may not yield any commercially viable products. As a result of having limited financial and managerial resources, we may forego or delay pursuit of opportunities that later prove to have greater commercial potential. For example, as part of the ongoing strategic prioritization exercise, in 2023 we announced that while we will continue to pursue gene knock-out opportunistically, the proof-of-concept data continues to lead toward prioritizing programs involving complex edits and gene insertion. As such, we made the decision to cease pursuit of PBGENE-PCSK9 for familial hypercholesterolemia with iECURE as our partner in December 2022. We also made the choice to look for a partner in the kidney disease arena for further development of PBGENE-PH1 and will no longer develop the program on our own. There is no guarantee that this ongoing prioritization review will ultimately lead to any viable commercial products, profitable market opportunities or other value-enhancing activities. Our resource allocation decisions may cause us to fail to timely capitalize on viable commercial products or profitable market opportunities. Additionally, if we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other strategic arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

Risks Related to the Identification, Development and Commercialization of Our Product Candidates

ARCUS is a novel technology, making it difficult to predict the time, cost and potential success of product candidate development. We have not yet been able to assess the safety and efficacy of most of our product candidates in humans.

Our success depends on our ability to develop and commercialize product candidates using our novel genome editing technology. The novel nature of our technology makes it difficult to accurately predict the developmental challenges we may face for product candidates as they proceed through research, preclinical studies and clinical trials. There have been a limited number of clinical trials of products created with genome editing technologies, four of which have utilized our technology. Because our therapeutic research programs are all in preclinical or early clinical stages, we have only been able to assess limited safety and efficacy data of our product candidates in human trials. Current or future product candidates may not meet safety and efficacy requirements for continued development or ultimate approval in humans and may cause significant adverse events or toxicities. All of our product candidates are designed to act at the level of DNA, and because animal DNA differs from human DNA, it will be difficult for us to test our therapeutic product candidates in animal models for either safety or efficacy, and any testing that we conduct may not translate to their effects in humans. Moreover, animal models may not exist for some of the targets, diseases or indications that we intend to pursue. Our product candidates may not be able to properly implement desired genetic edits with sufficient accuracy to be viable therapeutic products, and there may be long-term effects associated with them that we cannot predict at this time. Any problems we experience related to the development of our genome editing technology or any of our or our collaborators' research programs or product candidates may cause significant delays or unanticipated costs, and we may not be able to satisfactorily solve such problems. These factors may prevent us or our collaborators from completing our preclinical studies or any clinical trials that we or our collaborators have ongoing or may initiate, or profitably commercializing any product candidates on a timely basis, or at all. We may also experience delays in developing a sustainable, reproducible and scalable manufacturing process as we develop and prepare to commercialize product candidates. These factors make it more difficult for us to predict the time, cost and potential success of product candidate development. If our product development activities take longer or cost more than anticipated, or if they ultimately are not successful, it would materially adversely affect our business and results of operations.

The genome editing field is relatively new and evolving rapidly, and other existing or future technologies may provide significant advantages over our ARCUS platform, which could materially harm our business.

To date, we have focused our efforts on optimizing our proprietary genome editing technology and exploring its potential applications. ARCUS is a novel genome editing technology using sequence-specific DNA-cutting enzymes, or nucleases, that is designed to perform modifications in the DNA of living cells and organisms. Other companies have previously undertaken research and development of genome editing technologies using zinc finger nucleases, transcription activator-like effector nucleases ("TALENs") and clustered regularly interspaced short palindromic repeats associated protein-9 nuclease ("CRISPR/Cas9"), although none has obtained marketing approval for a product candidate developed using such technologies. Other genome editing technologies in development or commercially available, or other existing or future technologies, may lead to treatments or products that may be considered better suited for use in human therapeutics, which could reduce or eliminate our commercial opportunity.

We are heavily dependent on the successful development and translation of ARCUS, and due to the early stages of our product development operations, we cannot give any assurance that any product candidates will be successfully developed and commercialized.

We are at an early stage of development of the product candidates currently in our programs and are continuing to develop our ARCUS technology. To date, we have invested substantially all of our efforts and financial resources to develop ARCUS and advance our current product development programs, including conducting preclinical studies, early stage clinical trials and other early research and development activities, and providing general and administrative support for these operations. Due to the strategic transaction with Imugene for our azer-cel for cancer, as well as our CAR T infrastructure and cell therapy teams, and the TG License Agreement, we are now solely focused on leveraging our ARCUS genome editing platform to advance a new potential class of gene editing programs that go beyond gene knockouts in the liver and carry out sophisticated edits such as gene insertions, gene excision, and gene elimination in human therapeutics. We are also currently using our ARCUS technology to develop our lead *in vivo* gene editing programs targeting HBV, DMD, and certain hemoglobinopathies, among other indications. Our future success is dependent on our ability to successfully develop and, where applicable, obtain regulatory approval for, including marketing approval for, and then successfully commercialize, product candidates, either alone or with collaborators. We have not yet developed and commercialized any product candidates, and we may not be able to do so, alone or with collaborators.

Our research and development programs may not lead to the successful identification, development or commercialization of any products.

The success of our business depends primarily upon our ability to identify, develop and commercialize products using our genome editing technology. All of our *in vivo* product candidates and product development programs we are currently pursuing are still in the discovery or preclinical stages. We may be unsuccessful in advancing those product candidates into clinical development or in identifying any developing additional product candidates. Our ability to identify and develop product candidates is subject to the numerous risks associated with preclinical and early stage biotechnology development activities, including that:

- the use of ARCUS may be ineffective in identifying additional product candidates;
- we may not be able to assemble sufficient resources to acquire or discover additional product candidates;
- we may not be able to enter into collaborative arrangements to facilitate development of product candidates, the terms of our collaborative arrangements may change, or our collaborative arrangements may be terminated;
- competitors may develop alternatives that render our product candidates obsolete or less attractive;
- our product candidates may be covered by third parties' patents or other exclusive rights;
- the regulatory pathway for a product candidate may be too complex, expensive or otherwise difficult to navigate successfully; or
- our product candidates may be shown to not be effective, have harmful side effects or otherwise pose risks not outweighed by such product candidate's benefits or have other characteristics that may make the products impractical to manufacture, unlikely to receive any required marketing approval, unlikely to generate sufficient market demand or otherwise not achieve profitable commercialization.

Our current and future product candidates may never be approved. Failure to successfully identify and develop new product candidates and obtain regulatory approvals for our products would have a material adverse effect on our business and financial condition and could cause us to cease operations.

If our product candidates do not achieve projected development milestones or commercialization in the announced or expected timeframes, the further development or commercialization of such product candidates may be delayed, and our business will be harmed.

We sometimes estimate, or may in the future estimate, the timing of the accomplishment of various scientific, clinical, manufacturing, regulatory and other product development objectives. These milestones may include our expectations regarding the commencement or completion of scientific studies or clinical trials, the submission of regulatory filings, the receipt of marketing approval or the realization of other commercialization objectives. The achievement of many of these milestones may be outside of our control. All of these milestones are based on a variety of assumptions, including assumptions regarding capital resources, constraints and priorities, progress of and results from development activities, participation of third parties including outside collaborators or vendors, the receipt of key regulatory approvals or actions, and other factors, any of which may cause the timing of achievement of the milestones to vary considerably from our estimates. If we or our collaborators fail to achieve announced milestones in the expected timeframes, the commercialization of the product candidates may be delayed, our credibility may be undermined, our business and results of operations may be harmed, and the trading price of our common stock may decline.

Adverse public perception of genome editing may negatively impact the developmental progress or commercial success of products that we develop alone or with collaborators.

The developmental and commercial success of our current product candidates, or any that we develop alone or with collaborators in the future, will depend in part on public acceptance of the use of genome editing technology for the prevention or treatment of human diseases. Adverse public perception of applying genome editing technology for these purposes may negatively impact our ability to raise capital or enter into strategic agreements for the development of product candidates.

Any therapeutic product candidates may involve editing the human genome. The commercial success of any such potential therapeutic products, if successfully developed and approved, may be adversely affected by claims that genome editing is unsafe, unethical or immoral. This may lead to unfavorable public perception and the inability of any therapeutic product candidates to gain the acceptance of the public or the medical community. Unfavorable public perceptions may also adversely impact our or our collaborators' ability to enroll clinical trials for therapeutic product candidates. Moreover, success in commercializing any therapeutic product candidates that receive regulatory approval will depend upon physicians prescribing, and their patients being willing to receive, treatments that

involve the use of such product candidates in lieu of, or in addition to, existing treatments with which they are already familiar and for which greater clinical data may be available. Publicity of any adverse events in, or unfavorable results of, preclinical studies or clinical trials for any current or future product candidates, including, without limitation, patient deaths, or with respect to the studies or trials of our competitors or of academic researchers utilizing genome editing technologies, even if not ultimately attributable to our technology or product candidates, could negatively influence public opinion. Negative public perception about the use of genome editing technology in human therapeutics, whether related to our technology or a competitor's technology, could result in increased governmental regulation, delays in the development and commercialization of product candidates or decreased demand for the resulting products, any of which may have a negative impact on our business and financial condition.

We face significant competition in industries experiencing rapid technological change, and there is a possibility that our competitors may achieve regulatory approval before us or develop product candidates or treatments that are safer or more effective than ours, which may harm our financial condition and our ability to successfully market or commercialize any of our product candidates.

The development and commercialization of new drug products is highly competitive, and the genome editing field is characterized by rapidly changing technologies, significant competition and a strong emphasis on intellectual property. We will face competition with respect to our current and future therapeutic product candidates from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide. Potential competitors also include academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and commercialization of products.

There are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of products for the treatment of the disease indications for which we have research programs. Some of these competitive products and therapies are based on scientific approaches that are similar to our approach, and others are based on entirely different approaches. We principally compete with others developing and utilizing genome editing technology in the human health sector. Several companies have obtained FDA approval for autologous immunotherapies, and a number of companies are pursuing allogeneic immunotherapies. We expect that our operations focused on developing products for *in vivo* gene editing will face substantial competition from others focusing on gene therapy treatments, especially those that may focus on conditions that our product candidates target. Moreover, any human therapeutics products that we develop alone or with collaborators will compete with existing standards of care for the diseases and conditions that our product candidates target and other types of treatments, such as small molecule, antibody or protein therapies.

Many of our current or potential competitors, either alone or with their collaborators, have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs. Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products we develop alone or with collaborators or that would render any such products obsolete or non-competitive. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we or our collaborators may obtain approval for any that we develop, which could result in our competitors establishing a strong market position before we are able to enter the market. Additionally, technologies developed by our competitors may render our product candidates uneconomical or obsolete, and we or our collaborators may not be successful in marketing any product candidates we may develop against competitors. The availability of our competitors' products could limit the demand, and the price we are able to charge, for any products that we develop alone or with collaborators.

Our future profitability, if any, will depend in part on our ability and the ability of our collaborators or other licensees to commercialize any products that we, our collaborators, or our other licensees may develop in markets throughout the world. Commercialization of products in various markets could subject us to risks and uncertainties, including:

- obtaining, on a country-by-country basis, the applicable marketing authorization from the competent regulatory authority;
- the burden of complying with complex and changing regulatory, tax, accounting, labor and other legal requirements in each jurisdiction that we or our collaborators pursue;
- reduced protection for intellectual property rights;

- differing medical practices and customs affecting acceptance in the marketplace;
- import or export licensing requirements;
- governmental controls, trade restrictions or changes in tariffs;
- economic weakness, including inflation, political instability in particular foreign economies and markets, or civil unrest or war, such as the current conflict between Russia and Ukraine;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad;
- longer accounts receivable collection times;
- longer lead times for shipping;
- language barriers;
- foreign currency exchange rate fluctuations;
- foreign reimbursement, pricing and insurance regimes; and
- the interpretation of contractual provisions governed by foreign laws in the event of a contract dispute.

We have limited or no prior experience in these areas, and our collaborators may have limited experience in these areas. Failure to successfully navigate these risks and uncertainties may limit or prevent market penetration for any products that we or our collaborators may develop, which would limit their commercial potential and our revenues.

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

We face an inherent risk of product liability and professional indemnity exposure related to the testing in clinical trials of our product candidates. We will face an even greater liability risk if we commercially sell any products that we or our collaborators may develop for human use. Manufacturing defects, errors in product distribution or storage processes, improper administration or application and known or unknown side effects of product usage may result in liability claims against us or third parties with which we have relationships. These actions could include claims resulting from acts by our collaborators, licensees and subcontractors over which we have little or no control.

For example, our liability could be sought by patients participating in clinical trials for potential therapeutic product candidates as a result of unexpected side effects, improper product administration or the deterioration of a patient's condition, patient injury or even death. Criminal or civil proceedings might be filed against us by patients, regulatory authorities, biopharmaceutical companies and any other third party using or marketing any product candidates or products that we develop alone or with collaborators. On occasion, large judgments have been awarded in class action lawsuits based on products that had unanticipated adverse effects. If we cannot successfully defend ourselves against claims that product candidates or products we develop alone or with collaborators caused harm, we could incur substantial liabilities.

Regardless of merit or eventual outcome, liability claims may result in:

- significant time and costs to defend the related litigation;
- injury to our reputation and significant negative media attention;
- diversion of management's attention from pursuing our strategy;
- withdrawal of clinical trial participants;
- delay or termination of clinical trials;
- decreased demand for any products that we develop alone or with collaborators;

- substantial monetary awards to trial participants or patients;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue; and
- the inability to further develop or commercialize any products.

Although the clinical trial process is designed to identify and assess potential side effects, clinical development does not always fully characterize the safety and efficacy profile of a new medicine, and it is always possible that a drug or biologic, even after regulatory approval, may exhibit unforeseen side effects. If our product candidates were to cause adverse side effects during clinical trials or after approval, we may be exposed to substantial liabilities. Physicians and patients may not comply with any warnings that identify known potential adverse effects and patients who should not use our product candidates. If any of our product candidates are approved for commercial sale, we will be highly dependent upon consumer perceptions of us and the safety and quality of such products. We could be adversely affected if we are subject to negative publicity associated with illness or other adverse effects resulting from patients' use or misuse of such products or any similar products distributed by other companies.

Although we maintain product liability insurance coverage, it may not be adequate to cover all liabilities that we may incur. We anticipate that we will need to increase our insurance coverage if we or our collaborators successfully commercialize any products. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liabilities to which we may become subject.

Additional Risks Related to the Identification, Development and Commercialization of Our Therapeutic Product Candidates

The regulatory landscape that will apply to development of therapeutic product candidates by us or our collaborators is rigorous, complex, uncertain and subject to change, which could result in delays or termination of development of such product candidates or unexpected costs in obtaining regulatory approvals.

Regulatory requirements governing products created with genome editing technology or involving gene therapy treatment have changed frequently and will likely continue to change in the future. Approvals by one regulatory agency may not be indicative of what any other regulatory agency may require for approval, and there has historically been substantial, and sometimes uncoordinated, overlap in those responsible for regulation of gene therapy products, cell therapy products and other products created with genome editing technology. For example, in the United States, the FDA has established the Office of Therapeutic Products within its Center for Biologics Evaluation and Research ("CBER") to consolidate the review of gene therapy and related products, and the Cellular, Tissues, and Gene Therapies Advisory Committee to advise CBER on its review. Our product candidates will need to meet safety, purity, and potency standards applicable to any new biologic under the regulatory framework administered by the FDA.

In addition to the submission of an IND to the FDA, before initiation of a clinical trial in the United States, certain human clinical trials subject to the NIH Guidelines are subject to review and oversight by an institutional biosafety committee ("IBC"), a local institutional committee that reviews and oversees research utilizing recombinant or synthetic nucleic acid molecules at that institution. The IBC assesses the safety of the research and identifies any potential risk to public health or the environment, and such review may result in some delay before initiation of a clinical trial. While the NIH Guidelines are not mandatory unless the research in question is being conducted at or sponsored by institutions receiving NIH funding of recombinant or synthetic nucleic acid molecule research, many companies and other institutions not otherwise subject to the NIH Guidelines voluntarily follow them. We are subject to significant regulatory oversight by the FDA, and in addition to the government regulators, the applicable IBC and IRB of each institution at which we or our collaborators conduct clinical trials of our product candidates, or a central IRB if appropriate, would need to review and approve the proposed clinical trial.

The same applies in the EU. The EMA has a Committee for Advanced Therapies ("CAT") that is responsible for assessing the quality, safety and efficacy of ATMPs. ATMPs include gene therapy medicine, somatic-cell therapy medicines and tissue-engineered medicines. The role of the CAT is to prepare a draft opinion on an application for marketing authorization for a gene therapy medicinal product candidate that is submitted to the EMA. In the EU, the development and evaluation of a gene therapy medicinal product must be considered in the context of the relevant EU guidelines. The EMA may issue new guidelines concerning the development and marketing authorization for gene therapy medicinal products and require that we comply with these new guidelines. Similarly complex regulatory environments exist in other jurisdictions in which we might consider seeking regulatory approvals for our product candidates, further complicating the regulatory landscape. As a result, the procedures and standards applied to gene therapy products and cell therapy products may be applied to any of our gene therapy or genome editing product candidates, but that remains uncertain at this point.

The clinical trial requirements of the FDA, the EMA and other foreign regulatory authorities and the criteria these regulators use to evaluate 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 product candidates created with novel genome editing technology such as ours can be more lengthy, rigorous and expensive than the process for other better known or more extensively studied product candidates and technologies. Since we are developing novel treatments for diseases in which there is little clinical experience with new endpoints and methodologies, there is heightened risk that the FDA, the EMA or comparable regulatory bodies may not consider the clinical trial endpoints to provide clinically meaningful results, and the resulting clinical data and results may be more difficult to analyze. This may be a particularly significant risk for many of the genetically defined diseases for which we may develop product candidates alone or with collaborators due to small patient populations for those diseases, and designing and executing a rigorous clinical trial with appropriate statistical power is more difficult than with diseases that have larger patient populations. Regulatory agencies administering existing or future regulations or legislation may not allow production and marketing of products utilizing genome editing technology in a timely manner or under technically or commercially feasible conditions. Even if our product candidates obtain required regulatory approvals, such approvals may later be withdrawn as a result of changes in regulations or the interpretation of regulations by applicable regulatory agencies.

Changes in applicable regulatory guidelines may lengthen the regulatory review process for our product candidates, require additional studies or trials, increase development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of such product candidates, or lead to significant post-approval limitations or restrictions. Additionally, adverse developments in clinical trials conducted by others of gene therapy products or products created using genome editing technology, such as products developed through the application of a CRISPR/Cas9 technology, or adverse public perception of the field of genome editing, may cause the FDA, the EMA and other regulatory bodies to revise the requirements for approval of any product candidates we may develop or limit the use of products utilizing genome editing technologies, either of which could materially harm our business. For example, on November 28, 2023, the FDA announced that it was investigating reports of T-cell malignancies, including CAR-positive lymphoma, in patients who received treatment with BCMA- or CD19-directed autologous CAR T cell immunotherapies, and in January 2024, the FDA required the manufacturers of certain CAR-T therapies to add boxed warnings to product labeling cautioning against the risk of T-cell malignancies. Although we are no longer pursuing the development of CAR-T candidates following our strategic divestment of azer-cel, issues associated with these novel treatment modalities could lead to adverse public perceptions or otherwise affect the manner in which the FDA regulates gene editing products, such as those we are seeking to develop. Furthermore, regulatory action or private litigation could result in expenses, delays or other impediments to our research programs or the development or commercialization of current or future product candidates.

As we advance product candidates alone or with collaborators, we will be required to consult with these regulatory and advisory groups and comply with all applicable guidelines, rules and regulations. If we fail to do so, we or our collaborators may be required to delay or terminate development of such product candidates. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a product candidate to market could decrease our ability to generate sufficient product revenue to maintain our business.

We may not be able to submit INDs to the FDA or CTAs to comparable foreign authorities to commence clinical trials on the timelines we expect, and even if we are able to, the FDA or comparable foreign authorities may not permit us to proceed.

We plan to submit INDs and CTAs to enable us to conduct clinical trials for product candidates in the future, and we expect to file IND amendments to enable us to conduct clinical trials under existing INDs. We cannot be sure that submission of an IND, CTA, or IND amendment will result in us being allowed to proceed with clinical trials, or that, once begun, issues will not arise that could result in the suspension or termination such clinical trials. The manufacturing of *in vivo* therapies for genetic and infectious diseases remains an emerging and evolving field. Accordingly, we expect CMC related topics, including product specifications, will be a focus of IND and CTA reviews, which may delay receipt of authorization to proceed under INDs and CTAs. Additionally, even if such regulatory authorities agree with the design and implementation of the clinical trials set forth in an IND or CTA, we cannot guarantee that such regulatory authorities will not change their requirements in the future. Similar risks may exist in foreign jurisdictions where we intend to conduct clinical trials.

The regulatory approval processes of the FDA and comparable foreign authorities are lengthy, time consuming and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our product candidates, our business will be substantially harmed.

We and any collaborators are not permitted to commercialize, market, promote or sell any product candidate in the United States without obtaining marketing approval from the FDA. Foreign regulatory authorities impose similar requirements. The time required to obtain approval by the FDA and comparable foreign authorities is unpredictable, but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including substantial discretion of the regulatory authorities and sufficient resources at the FDA or foreign regulatory authorities. In addition, approval policies, regulations or the type and amount of

clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. To date, we have not submitted a BLA or other marketing authorization application to the FDA or similar drug approval submissions to comparable foreign regulatory authorities for any product candidate. We and any collaborators must complete additional preclinical or nonclinical studies and clinical trials to demonstrate the safety and efficacy of our product candidates in humans to the satisfaction of the regulatory authorities before we will be able to obtain these approvals.

Our product candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our or our collaborators' clinical trials;
- we or our collaborators may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we or our collaborators may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our or our collaborators' interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of product candidates may not be sufficient to support the submission of a BLA or other submission or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve our manufacturing processes or facilities or those of third-party manufacturers with which we or our collaborators contract for clinical and commercial supplies;
- the FDA, comparable foreign regulatory authorities or notified bodies may fail to approve or certify the companion diagnostics we may contemplate developing with collaborators; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our or our collaborators' clinical data insufficient for approval.

This lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, results of operations and prospects.

In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may impose significant limitations in the form of narrow indications, warnings, or a REMS or similar risk management measures. Regulatory authorities may not approve the price we or our collaborators intend to charge for products we may develop, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Any of the foregoing scenarios could materially harm the commercial prospects for our product candidates.

In addition, FDA and foreign regulatory authorities may change their approval policies and new regulations may be enacted. For instance, the EU pharmaceutical legislation is currently undergoing a complete review process, in the context of the Pharmaceutical Strategy for Europe initiative, launched by the European Commission in November 2020. The European Commission's proposal for revision of several legislative instruments related to medicinal products (potentially revising the duration of regulatory exclusivity, eligibility for expedited pathways, etc.) is currently expected during the first quarter of 2023. The proposed revisions, once they are agreed and adopted by the European Parliament and European Council (not expected before the end of 2024 or early 2025) may have a significant impact on the biopharmaceutical industry in the long term.

Clinical trials are difficult to design and implement, expensive, time-consuming and involve an uncertain outcome, and the inability to successfully and timely conduct clinical trials and obtain regulatory approval for our product candidates would substantially harm our business.

Clinical testing is expensive and usually takes many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process, and product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials. We do not know whether any of our planned or future clinical trials will need to be redesigned, recruit and enroll patients on time or be completed on schedule, or at all. Clinical trials have been and may in the future be delayed, suspended or terminated for a variety of reasons, including in connection with:

- the inability to generate sufficient preclinical, toxicology or other *in vivo* or *in vitro* data to support the initiation of clinical trials;
- applicable regulatory authorities disagreeing as to the design or implementation of the clinical trials;
- obtaining regulatory authorization to commence a trial;
- reaching an agreement on acceptable terms with prospective contract research organizations ("CROs") and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining IRB or ethics committee approval or positive opinion at each site;
- developing and validating the companion diagnostic to be used in a clinical trial, if applicable;
- insufficient or inadequate supply or quality of product candidates or other materials, including identification of lymphocyte donors meeting regulatory standards necessary for use in clinical trials, or delays in sufficiently developing, characterizing or controlling a manufacturing process suitable for clinical trials;
- recruiting and retaining enough suitable patients to participate in a trial;
- having enough patients complete a trial or return for post-treatment follow-up;
- adding a sufficient number of clinical trial sites;
- inspections of clinical trial sites or operations by applicable regulatory authorities, or the imposition of a clinical hold;
- clinical sites deviating from trial protocol or dropping out of a trial;
- the inability to demonstrate the efficacy and benefits of a product candidate;
- discovering that product candidates have unforeseen safety issues, undesirable side effects or other unexpected characteristics;
- addressing patient safety concerns that arise during the course of a trial;
- receiving untimely or unfavorable feedback from applicable regulatory authorities regarding the trial or requests from regulatory authorities to modify the design of a trial;
- non-compliance with applicable regulatory requirements by us or third parties or changes in such regulations or administrative actions;
- suspensions or terminations by IRBs of the institutions at which such trials are being conducted, by the Data Safety Monitoring Board ("DSMB") for such trial or by the FDA or other foreign regulatory authorities due to a number of factors, including those described above;

- third parties being unable or unwilling to satisfy their contractual obligations to us;
- competitive pressures and other market conditions;
- changes in our financial priorities, greater than anticipated costs of completing a trial or our inability to continue funding the trial; or
- unforeseen events, such as natural or manmade disasters, public health emergencies, such as natural catastrophic events.

Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates. Additionally, we or our collaborators may experience unforeseen events during or resulting from clinical trials that could delay or prevent receipt of marketing approval for or commercialization of product candidates. For example, clinical trials of product candidates may produce negative, inconsistent or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon development programs. Regulators may also revise the requirements for approving the product candidates, or such requirements may not be as we anticipate. If we or our collaborators are required to conduct additional clinical trials or other testing of product candidates beyond those that we or our collaborators currently contemplate, if we or our collaborators are unable to successfully complete clinical trials or other testing of such product candidates, if the results of these trials or tests are not positive or are only modestly positive or if there are safety concerns, we may:

- incur unplanned costs;
- be delayed in obtaining or fail to obtain marketing approval for product candidates;
- obtain marketing approval in some countries and not in others;
- obtain marketing approval for indications or patient populations that are not as broad as intended or desired;
- obtain marketing approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;
- be subject to additional post-marketing testing requirements;
- be subject to changes in the way the product is administered;
- have regulatory authorities withdraw or suspend their approval of the product or impose restrictions on its distribution;
- be sued; or
- experience damage to our reputation.

If we or our collaborators experience delays in the commencement or completion of our clinical trials, or if we or our collaborators terminate a clinical trial prior to completion, we may experience increased costs, have difficulty raising capital and/or be required to slow down the development and approval process timelines. Furthermore, the product candidates that are the subject of such trials may never receive regulatory approval, and their commercial prospects and our ability to generate product revenues from them could be impaired or not realized at all.

Moreover, principal investigators for our clinical trials may serve as scientific advisors or consultants to us from time to time and receive compensation in connection with such services. Under certain circumstances, we may be required to report some of these relationships to the FDA or comparable foreign regulatory authorities. The FDA or comparable foreign regulatory authorities may conclude that a financial relationship between us and a principal investigator has created a conflict of interest or otherwise affected interpretation of the study. The FDA or comparable foreign regulatory authorities may therefore question the integrity of the data generated at the applicable clinical trial site and the utility of the clinical trial itself may be jeopardized. This could result in a delay in approval, or rejection, of our marketing applications by the FDA or comparable foreign regulatory authorities, as the case may be, and may ultimately lead to the denial of marketing approval of one or more of our product candidates.

If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies governing clinical trials, our development plans may also be impacted.

Any product candidates that we or our collaborators may develop will be novel and may be complex and difficult to manufacture, and if we experience manufacturing problems, it could result in delays in development and commercialization of such product candidates or otherwise harm our business.

Our product candidates involve or will involve novel genome editing technology and will require processing steps that are more complex than those required for most small molecule drugs, resulting in a relatively higher manufacturing cost. Moreover, unlike small molecules, the physical and chemical properties of biologics generally cannot be fully characterized. As a result, assays of the finished product may not be sufficient to ensure that such product will perform in the intended manner. Although we intend to employ multiple steps to control the manufacturing process, we may experience manufacturing issues with any of our product candidates that could cause production interruptions, including contamination, equipment or reagent failure, improper installation or operation of equipment, facility contamination, raw material shortages or contamination, natural disasters, disruption in utility services, human error, disruptions in the operations of our suppliers, inconsistency in cell growth and variability in product characteristics. We may encounter problems achieving adequate quantities and quality of clinical-grade materials that meet FDA, EMA or other comparable applicable standards or specifications with consistent and acceptable production yields and costs. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our product candidates or in the manufacturing facilities in which such product candidates are made, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. Problems with the manufacturing process, even minor deviations from the normal process, could result in product defects or manufacturing failures that result in lot failures, delays in initiating or completing clinical trials, product recalls, product liability claims or insufficient inventory.

As product candidates are developed through preclinical to late-stage clinical trials towards approval and commercialization, we expect that various aspects of the development program, such as manufacturing methods, may be altered along the way in an effort to help optimize processes and results. Such changes carry the risk that they will not achieve the intended objectives, and any of these changes could cause our product candidates to perform differently and affect the results of future clinical trials or our reliance on results of trials that have previously been conducted using the product candidate in its previous form. If the manufacturing process is changed during the course of product development, we or our collaborators may be required to repeat some or all of the previously conducted trials or conduct additional bridging trials, which could increase our costs and delay or impede our ability to obtain marketing approval.

We expect our manufacturing strategy for one or more of our product candidates may involve the use of contract manufacturing organizations ("CMOs"). The facilities used by us and our contract manufacturers to manufacture therapeutic product candidates must be evaluated for the manufacture of our product candidates by the FDA or foreign regulatory authorities pursuant to inspections that will be conducted after we submit a BLA to the FDA, or similar foreign applications to foreign regulatory authorities. We do not control the manufacturing process of our contract manufacturers and are dependent on their compliance with cGMP or similar foreign requirements for their manufacture of our product candidates. We may establish multiple manufacturing facilities as we expand our commercial footprint to multiple geographies, which will be costly and time consuming and may lead to regulatory delays. Even if we are successful, our manufacturing capabilities could be affected by cost-overruns, potential problems with scale-out, process reproducibility, stability issues, lot inconsistency, timely availability of reagents or raw materials, unexpected delays, equipment failures, labor shortages, natural disasters, utility failures, regulatory issues and other factors that could prevent us from realizing the intended benefits of our manufacturing strategy and have a material adverse effect on our business.

The FDA, the EMA and other foreign regulatory authorities may require us to submit samples of any lot of any product that may receive approval together with the protocols showing the results of applicable tests at any time. Under some circumstances, the FDA, the EMA or other foreign regulatory authorities may require that we not distribute a lot until the relevant agency authorizes its release. Slight deviations in the manufacturing process, including those affecting quality attributes and stability, may result in unacceptable changes in the product that could result in lot failures or product recalls. Lot failures or product recalls could cause us or our collaborators to delay product launches or clinical trials, which could be costly to us and otherwise harm our business. Problems in our manufacturing process also could restrict our or our collaborators' ability to meet market demand for products.

Any problems in our manufacturing process or facilities could make us a less attractive collaborator for potential partners, including larger pharmaceutical companies and academic research institutions, which could limit our access to additional attractive development opportunities.

Any delays or difficulties in our or our collaborators' ability to enroll patients in clinical trials could delay or prevent receipt of regulatory approvals.

We or our collaborators may not be able to initiate or continue clinical trials on a timely basis or at all for any product candidates we or our collaborators identify or develop if we or our collaborators are unable to locate and enroll a sufficient number of eligible patients to participate in the trials as required by applicable regulations or as needed to provide appropriate statistical power for a given trial. Additionally, some of our competitors may have ongoing clinical trials for product candidates that would treat the same indications as one or more of our product candidates, and patients who would otherwise be eligible for our clinical trials may instead enroll in our competitors' clinical trials.

Patient enrollment may also be affected by many factors, including:

- severity and difficulty of diagnosing of the disease under investigation;
- the difficulty in recruiting and/or identifying eligible patients suffering from rare diseases being evaluated under our trials;
- size of the patient population and process for identifying subjects;
- eligibility and exclusion criteria for the trial in question, including unforeseen requirements by the FDA or other regulatory authorities that we restrict one or more entry criteria for the study for safety reasons;
- our or our collaborators' ability to recruit clinical trial investigators with the appropriate competencies and experience;
- design of the trial protocol;
- availability and efficacy of approved medications or therapies, or other clinical trials, for the disease or condition under investigation;
- perceived risks and benefits of the product candidate under trial or testing, or of the application of genome editing to human indications;
- availability of genetic testing for potential patients;
- efforts to facilitate timely enrollment in clinical trials;
- patient referral practices of physicians;
- ability to obtain and maintain subject consent;
- risk that enrolled subjects will drop out before completion of the trial;
- ability to monitor patients adequately during and after treatment;
- proximity and availability of clinical trial sites for prospective patients; and
- unforeseen events, such as natural or manmade disasters, public health emergencies may impact our operations, or other natural catastrophic events.

We expect that some of our product candidates will focus on rare genetically defined diseases with limited patient pools from which to draw for enrollment in clinical trials. The eligibility criteria of our clinical trials will further limit the pool of available trial participants. In addition to the factors identified above, patient enrollment in any clinical trials we or our collaborators may conduct may be adversely impacted by any negative outcomes our competitors may experience, including adverse side effects, clinical data showing inadequate efficacy or failures to obtain regulatory approval.

Furthermore, our or our collaborators' ability to successfully initiate, enroll and conduct a clinical trial outside the United States is subject to numerous additional risks, including:

- difficulty in establishing or managing relationships with CROs and physicians;
- differing standards for the conduct of clinical trials;
- differing standards of care for patients with a particular disease;
- an inability to locate qualified local consultants, physicians and partners; and
- the potential burden of complying with a variety of foreign laws, medical standards and regulatory requirements, including the regulation of pharmaceutical and biotechnology products and treatments.

Enrollment delays in clinical trials may result in increased development costs for any of our product candidates, which may cause the value of our company to decline and limit our ability to obtain additional financing. If we or our collaborators have difficulty enrolling a sufficient number of patients to conduct clinical trials as planned, we may need to delay, limit or terminate ongoing or planned clinical trials, any of which may have an adverse effect on our results of operations and prospects.

Results of preclinical studies and early clinical trials of product candidates may not be predictive of results of later studies or trials. Our product candidates may not have favorable results in later clinical trials, if any, or receive regulatory approval.

Preclinical and clinical drug development is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the preclinical study or clinical trial process. Despite promising preclinical or clinical results, any product candidate can unexpectedly fail at any stage of preclinical or clinical development. The historical failure rate for product candidates in our industry is high.

The results from preclinical studies or early clinical trials of a product candidate may not be predictive of the results from later preclinical studies or clinical trials, and interim results of a clinical trial are not necessarily indicative of final results. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy characteristics despite having progressed through preclinical studies and initial clinical trials. Many companies in the biopharmaceutical and biotechnology industries have suffered significant setbacks at later stages of development after achieving positive results in early stages of development, and we may face similar setbacks. These setbacks have been caused by, among other things, preclinical findings made while clinical trials were underway or safety or efficacy observations made in clinical trials, including previously unreported adverse events. Moreover, non-clinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that believed their product candidates performed satisfactorily in preclinical studies and clinical trials nonetheless failed to obtain regulatory approval. Our *in vivo* gene editing technology and product candidates have never undergone testing in humans and have only been tested in a limited manner in animals, and results from animal studies may not be predictive of clinical trial results. Even if product candidates progress to clinical trials, these product candidates may fail to show the safety and efficacy in clinical development required to obtain regulatory approval, despite the observation of positive results in animal studies. Our or our collaborators' failure to replicate positive results from early research programs and preclinical studies may prevent us from further developing and commercializing those or other product candidates, which would limit our potential to generate revenues from them and harm our business and prospects.

For the foregoing reasons, we cannot be certain that any ongoing or future preclinical studies or clinical trials will be successful. Any safety or efficacy concerns observed in any one of our preclinical studies or clinical trials in a targeted area could limit the prospects for regulatory approval of product candidates in that and other areas, which could have a material adverse effect on our business and prospects.

Interim, "top-line" and initial data from studies or trials that we announce or publish from time to time may change as more data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publish interim, initial or "top-line" data from preclinical studies or clinical trials, which is based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the top-line results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. Initial or "top-line" data also remain subject to audit and verification procedures that may result in the final data being materially different from these initial data we previously published. As a result, interim, initial and "top-line" data should be viewed with caution until the final data are available.

Additionally, interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Adverse differences between initial or interim data and final data could significantly harm our business prospects.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular product candidate or product and our company in general. In addition, the information we choose to publicly disclose regarding a particular study or clinical trial is based on what is typically extensive information, and you or others may not agree with what we determine is the material or otherwise appropriate information to include in our disclosure. Any information we determine not to disclose may ultimately be deemed significant by you or others with respect to future decisions, conclusions, views, activities or otherwise regarding a particular product candidate or our business. If the top-line data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, product candidates may be harmed, which could significantly harm our business prospects.

Our product candidates may not work as intended or cause undesirable side effects that could hinder or prevent receipt of regulatory approval or realization of commercial potential for them or our other product candidates and substantially harm our business.

Our product candidates may be associated with off-target editing or other serious adverse events, undesirable side effects or unexpected characteristics, including large deletions and translocations or chromosomal abnormalities. Results of clinical trials could reveal severe or recurring side effects, toxicities or unexpected events, including death. Off-target cuts could lead to disruption of a gene or a genetic regulatory sequence at an unintended site in the DNA. In those instances where we also provide a segment of DNA, it is possible that following off-target cut events, such DNA could be integrated into the genome at an unintended site, potentially disrupting another important gene or genomic element. There may also be delayed adverse events following exposure to therapeutics made with genome editing technologies due to persistent biologic activity of the genetic material or other components of products used to carry the genetic material. In addition to serious adverse events or side effects caused by product candidates we develop alone or with collaborators, the administration process or related procedures may also cause undesirable side effects.

Further, any side effects may not be appropriately recognized or managed by the treating medical staff. We or our collaborators expect to have to educate medical personnel using any product candidates we may develop to understand the side effect profiles for our clinical trials and upon any commercialization of such product candidates. Inadequate recognition or management of the potential side effects of such product candidates could result in patient injury or death.

If any such events occur, clinical trials or commercial distribution of any product candidates or products we develop alone or with collaborators could be suspended or terminated, and our business and reputation could suffer substantial harm. Treatment-related side effects could affect patient recruitment and the ability of enrolled patients to complete the trial or result in potential liability claims. Regulatory authorities could order us or our collaborators to cease further development of, deny approval of or require us to cease selling any product candidates or products for any or all targeted indications. If we or our collaborators elect, or are required, to delay, suspend or terminate any clinical trial or commercialization efforts, the commercial prospects of such product candidates or products may be harmed, and our ability to generate product revenues from them or other product candidates that we develop may be delayed or eliminated.

Additionally, if we successfully develop a product candidate alone or with collaborators and it receives marketing approval, the FDA or foreign regulatory authorities could require us to adopt a REMS or similar risk management measures to ensure that the benefits of treatment with such product candidate outweigh the risks for each potential patient, which may include, among other things, a communication plan to health care practitioners, patient education, extensive patient monitoring or distribution systems and processes that are highly controlled, restrictive and more costly than what is typical for the industry. We or our collaborators may also be required to adopt a REMS or similar risk management measures or engage in similar actions, such as patient education, certification of health care professionals or specific monitoring, if we or others later identify undesirable side effects caused by any product that we develop alone or with collaborators. Such identification could also have several additional significant negative consequences, such as:

- regulatory authorities may suspend, withdraw or limit approvals of such product, or seek an injunction against its manufacture or distribution;
- regulatory authorities may require additional warnings on the label, including “boxed” warnings, or issue safety alerts, Dear Healthcare Provider letters, press releases or other communications containing warnings or other safety information about the product;

- we may be required to create a medication guide outlining the risks of such side effects for distribution to patients;
- we may be required to change the way a product is administered or conduct additional trials;
- the product may become less competitive;
- we or our collaborators may decide to remove the product from the marketplace;
- we may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- we could be sued and be held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us or our collaborators from achieving or maintaining market acceptance of any potential product, or otherwise have a negative impact on our business.

We are subject to federal, state and foreign healthcare laws and regulations relating to our business, and could face substantial penalties if we are determined not to have fully complied with such laws, which would have an adverse impact on our business.

Our business operations, as well as our current and anticipated future arrangements with investigators, healthcare professionals, consultants, third-party payors, customers and patients, expose or will expose us to broadly applicable foreign, federal, and state fraud and abuse and other healthcare laws and regulations. These laws constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute any potential products for which we may obtain marketing approval. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made under a U.S. healthcare program such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the U.S. federal Anti-Kickback Statute or specific intent to violate it in order to have committed a violation;
- U.S. federal civil and criminal false claims laws, including the civil False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalties laws, prohibits, among other things, individuals and entities from knowingly presenting, or causing to be presented, to the U.S. government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. government. In addition, the government may assert that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the U.S. Health Insurance Portability and Accountability Act of 1996 (“HIPAA”), which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, including private third-party payors, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the U.S. Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report annually to CMS information related to payments or other “transfers of value” made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), certain non-physician practitioners such as physician assistants and nurse practitioners, and teaching hospitals, and requires applicable manufacturers and group purchasing organizations to report annually to the Centers for Medicare and Medicaid Services (“CMS”), ownership and investment interests held by the physicians described above and their immediate family members; and

- analogous state and foreign laws and regulations, such as state anti-kickback and anti-corruption and false claims laws, which may apply to our business practices, including, but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers, or by the patients themselves; state laws and foreign laws and regulations that require pharmaceutical and device companies to comply with the industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. government or foreign governmental authorities, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state and local laws and regulations and foreign. laws and regulations that require manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures and pricing information; state and local laws and foreign laws and regulations which require the registration of pharmaceutical sales representatives.

Efforts to ensure that our current and future business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities may conclude that our business practices, including our relationships with certain physicians, some of whom are compensated in the form of stock options for consulting services provided, do not comply with current or future statutes, regulations, agency guidance or case law involving applicable healthcare laws. If our operations are found to be in violation of any of these or any other health regulatory laws that may apply to us, we may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, individual imprisonment, possible exclusion from participation in Medicare, Medicaid and other U.S. or foreign healthcare programs, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, contractual damages, reputational harm, diminished profits and future earnings, and curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Defending against any such actions can be costly, time-consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired. If any of the above occur, it could adversely affect our ability to operate our business and our results of operations.

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards and other requirements, and the increasing use of social media, could adversely affect our business, results of operations, and financial condition.

The global data protection landscape is rapidly evolving, and we are or may become subject to numerous state, federal and foreign laws, requirements and regulations governing the collection, use, disclosure, retention, and security of personal data, such as information that we may collect in connection with clinical trials in the U.S. and abroad. Implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future, and we cannot yet determine the impact future laws, regulations, standards, or perception of their requirements may have on our business. This evolution may create uncertainty in our business, affect our ability to operate in certain jurisdictions or to collect, store, transfer use and share personal information, necessitate the acceptance of more onerous obligations in our contracts, result in liability or impose additional costs on us. The cost of compliance with these laws, regulations and standards can be high and is likely to increase in the future. Any failure or perceived failure by us to comply with federal, state or foreign laws or regulation, our internal policies and procedures or our contracts governing our processing of personal information could result in negative publicity, government investigations and enforcement actions, claims by third parties and damage to our reputation, any of which could have a material adverse effect on our operations, financial performance and business.

As our operations and business grow, we may become subject to or affected by new or additional data protection laws and regulations and face increased scrutiny or attention from regulatory authorities. In the U.S., HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 and their implementing regulations, imposes, among other things, certain standards relating to the privacy, security, transmission and breach reporting of individually identifiable health information on covered entities (defined as health plans, health care clearinghouses and certain health care providers) and their respective business associates, individuals or entities that create, receive, maintain or transmit protected health information in connection with providing a service for or on behalf of a covered entity. HIPAA mandates the reporting of certain breaches of health information to the HHS, affected individuals and if the breach is large enough, the media. Most healthcare providers, including research institutions from which we obtain patient health information, are subject to privacy and security regulations promulgated under HIPAA. While we do not believe that we are currently acting as a covered entity or business associate under HIPAA and thus are not directly regulated under HIPAA, any person may be prosecuted under HIPAA's criminal provisions either directly or under aiding-and-abetting or conspiracy principles. Consequently, depending on the facts and circumstances, we could face substantial criminal penalties if we knowingly

receive individually identifiable health information from a HIPAA-covered healthcare provider or research institution that has not satisfied HIPAA's requirements for disclosure of individually identifiable health information.

Certain states have also adopted comparable privacy and security laws and regulations, some of which may be more stringent than HIPAA. Such laws and regulations will be subject to interpretation by various courts and other governmental authorities, thus creating potentially complex compliance issues for us and our future customers and strategic partners. For example, California enacted the California Consumer Privacy Act of 2018 ("CCPA"), which went into effect on January 1, 2020. The CCPA creates individual privacy rights for California consumers and increases the privacy and security obligations of entities handling certain personal information. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that has increased the likelihood of and risks associated with data breach litigation. Further, the California Privacy Rights Act ("CPRA") generally went into effect on January 1, 2023, and significantly amends the CCPA. The CPRA imposes additional data protection obligations on covered businesses, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It also creates a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. Similar laws have passed in Virginia, Colorado, Connecticut and Utah, and have been proposed in other states and at the federal level, reflecting a trend toward more stringent privacy legislation in the United States. The enactment of such laws could have potentially conflicting requirements that would make compliance challenging. In the event that we are subject to or affected by HIPAA, the CCPA, the CPRA or other domestic privacy and data protection laws, any liability from failure to comply with the requirements of these laws could adversely affect our financial condition.

In Europe, the European Union General Data Protection Regulation ("GDPR") went into effect in May 2018 and imposes strict requirements for processing the personal data of individuals within the European Economic Area ("EEA"). Companies that must comply with the GDPR face increased compliance obligations and risk, including more robust regulatory enforcement of data protection requirements, and potential fines for noncompliance of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. Since January 1, 2021 we have also been subject to compliance with the GDPR and the UK GDPR, which, together with the amended UK Data Protection Act 2018, retains the GDPR in UK national law. The UK GDPR mirrors the fines under the GDPR, i.e., fines up to the greater of €20 million/ £17 million or 4% of global turnover.

Recent legal developments in Europe have created complexity and uncertainty regarding transfers of personal data from the EEA and the UK to the U.S. Most recently, on July 16, 2020, the Court of Justice of the European Union ("CJEU") invalidated the EU-US Privacy Shield Framework, also known as the Privacy Shield, under which personal data could be transferred from the EEA to US entities who had self-certified under the Privacy Shield scheme. In March 2022, the U.S. and EU announced a new regulatory regime intended to replace the invalidated regulations; however, this new EU-US Data Privacy Framework has not been implemented beyond an executive order signed by President Biden on October 7, 2022 on Enhancing Safeguards for Untied States Signals Intelligence Activities. European court and regulatory decisions subsequent to the CJEU decision of July 16, 2020 have taken a restrictive approach to international data transfers. Additionally, the EU adopted the EU Clinical Trials Regulation, which came into effect on January 31, 2022. This regulation imposes obligations on the use of data generated from clinical trials and enables European patients to have the opportunity to access information about clinical trials.

These recent developments may require us to review and amend the legal mechanisms by which we make and/or receive personal data transfers to/ in the U.S. As supervisory authorities issue further guidance on personal data export mechanisms, including circumstances where the standard contractual clauses cannot be used, and/or start taking enforcement action, we could suffer additional costs, complaints and/or regulatory investigations or fines, and/or if we are otherwise unable to transfer personal data between and among countries and regions in which we operate, it could affect the manner in which we provide our services, the geographical location or segregation of our relevant systems and operations, and could adversely affect our financial results.

Despite our efforts to monitor evolving social media communication guidelines and comply with applicable rules, there is risk that the use of social media by us or our employees to communicate about our product candidates or business may cause us to be found in violation of applicable requirements. In addition, our employees may knowingly or inadvertently make use of social media in ways that may not comply with our internal policies or other legal or contractual requirements, which may give rise to liability, lead to the loss of trade secrets or other intellectual property, or result in public exposure of personal information of our employees, clinical trial patients, customers and others. Our potential patient population may also be active on social media and use these platforms to comment on the effectiveness of, or adverse experiences with, our product candidates. Negative posts or comments about us or our product candidates on social media could seriously damage our reputation, brand image and goodwill.

Although we work to comply with applicable laws, regulations and standards, our contractual obligations and other legal obligations, these requirements are evolving and may be modified, interpreted and applied in an inconsistent manner from one jurisdiction to another, and may conflict with one another or other legal obligations with which we must comply. Any failure or perceived failure by us or our employees, representatives, contractors, consultants, CROs, collaborators, or other third parties to comply with such

requirements or adequately address privacy and security concerns, even if unfounded, could result in additional cost and liability to us, damage our reputation, and adversely affect our business and results of operations.

We may seek orphan drug designation for our product candidates, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug designation, which may negatively impact our ability to develop or obtain regulatory approval for such product candidates and may reduce our revenue if we obtain such approval.

We may seek orphan drug designation for some or all of our product candidates in specific orphan indications in which there is a medically plausible basis for the use of these products. Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States when there is no reasonable expectation that the cost of developing and making available the drug or biologic in the United States will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user-fee waivers. After the FDA grants orphan drug designation, the generic identity of the drug and its potential orphan use are disclosed publicly by the FDA. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. Although we may seek orphan product designation for some or all of our other product candidates, we may never receive such designations.

If a product that has orphan drug 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, including a BLA, to market the same biologic for the same disease or condition for seven years, except in limited circumstances such as a showing of clinical superiority to the product with orphan product exclusivity or if FDA finds that the holder of the orphan drug exclusivity has not shown that it can ensure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated. Even if we or our collaborators or licensees obtain orphan drug designation for a product candidate, we or they may not be the first to obtain marketing approval for any particular orphan indication due to the uncertainties associated with developing pharmaceutical products. Exclusive marketing rights in the United States may be limited if we or our collaborators or licensees seek approval for a disease or condition broader than the orphan designated disease or condition and may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition. Further, even if a product obtains orphan drug exclusivity, that exclusivity may not effectively protect the product from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug for the same condition if the FDA concludes that the later drug is safer, more effective, or makes a major contribution to patient care. Furthermore, the FDA can waive orphan exclusivity if we or our collaborators or licensees are unable to manufacture sufficient supply of the product.

Similarly, in the EU, a medicinal product may receive orphan designation from the European Commission after receiving the opinion of the EMA's Committee for Orphan Medicinal Products, under Article 3 of Regulation (EC) 141/2000. This applies to products (1) that are intended for a life-threatening or chronically debilitating condition; and (2) either (a) such condition affects not more than five in 10,000 persons in the EU when the application is made, or (b) the product, without the benefits derived from orphan status, would be unlikely to generate sufficient returns in the EU to justify the necessary investment, and (3) there exists no satisfactory method of diagnosis, prevention or treatment of such condition authorized for marketing in the EU or, if such a method exists, the product will be of significant benefit to those affected by the condition. In the EU, orphan designation entitles a party to financial incentives such as reduction of fees, fee waivers, specific regulatory assistance and scientific advice, and access to the centralized marketing authorization procedure. Upon grant of a MA and assuming the requirements for orphan designation are also met at the time the marketing authorization is granted, orphan medicinal products are entitled to 10 years of market exclusivity for the approved therapeutic indication, during which time no similar medicinal product for the same indication may be placed on the market. An orphan product can also obtain an additional two years of market exclusivity in the EU for complying with an agreed Pediatric Investigation Plan. However, the 10-year market exclusivity may be reduced to six years if, at the end of the fifth year, it is established that the product no longer meets the criteria for orphan designation, for example, if the product is judged as sufficiently profitable not to justify maintenance of market exclusivity, or when the prevalence of the condition has increased above the orphan designation threshold. Additionally, marketing authorization may be granted to a similar product for the same indication at any time if:

- the second applicant can establish that its product, although similar, is safer, more effective or otherwise clinically superior;
- the first applicant consents to a second orphan medicinal product application; or
- the first applicant cannot supply enough orphan medicinal product.

Post-Brexit, the United Kingdom has retained the EU Regulation which governs the designation of medicinal products as orphan drugs and which establishes incentives thereto (Regulation (EC) No. 141/2000) as part of UK law by virtue of the European Union (Withdrawal) Act 2018. However any future changes to the legal requirements could lead to greater regulatory complexity and increased costs to our business.

The MHRA is responsible for reviewing applications from companies for orphan designation at the time of a marketing authorization application. If a medicinal product has been designated orphan in the EU under Regulation (EC) 141/2000, a Great Britain orphan MAA can be made under regulation 50G of the Human Medicines Regulation 2012 (as amended). A UK-wide orphan MAA can only be considered in the absence of an active EU orphan designation.

If a UK-wide orphan marketing authorization is granted and the medicinal product subsequently receives EU orphan designation, the market authorization holder would need to submit a variation to change this to a Great Britain orphan MA.

If we or our collaborators or licensees do not receive or maintain orphan drug designation for product candidates for which we seek such designation, it could limit our ability to realize revenues from such product candidates.

If the product candidates that we or our collaborators may develop receive regulatory approval in the United States or another jurisdiction, they may never receive approval in other jurisdictions, which would limit market opportunities for such product candidate and adversely affect our business.

Approval of a product candidate in the United States by the FDA or by the requisite regulatory agencies in any other jurisdiction does not ensure approval of such product candidate by regulatory authorities in other countries or jurisdictions. The approval process varies among countries and may limit our or our collaborators' ability to develop, manufacture, promote and sell product candidates internationally. Failure to obtain marketing approval in international jurisdictions would prevent the product candidates from being marketed outside of the jurisdictions in which regulatory approvals have been received. In order to market and sell product candidates in the EU and many other jurisdictions, we and our collaborators must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and may involve additional preclinical studies or clinical trials both before and after approval. In many countries, any product candidate for human use must be approved for reimbursement before it can be approved for sale in that country. In some cases, the intended price for such product is also subject to approval. Further, while regulatory approval of a product candidate in one country does not ensure approval in any other country, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory approval process in others. If we or our collaborators fail to comply with the regulatory requirements in international markets or to obtain all required marketing approvals, the target market for a particular potential product will be reduced, which would limit our ability to realize the full market potential for the product and adversely affect our business.

Current and future legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize any product candidates we or our collaborators develop and may adversely affect the prices for such product candidates.

In the United States and certain foreign jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could, among other things, prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our or our collaborators' ability to profitably sell any product candidates that obtain marketing approval.

For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively the ACA, was enacted in the United States. Among the provisions of the Affordable Care Act of importance to our product candidates, the ACA established an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents; increased the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program, extended manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations, expanded eligibility criteria for Medicaid programs, expanded the entities eligible for discounts under the Public Health program, addressed 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, 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, and created a licensure framework for follow-on biologic products.

Since its enactment, there have been judicial, administrative, executive, and legislative challenges to certain aspects of the ACA, and the most recent judicial challenge to the ACA brought before the Supreme Court was dismissed in June 2021 resulting in the ACA remaining in effect in its current form.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. These changes include the American Rescue Plan Act of 2021, which eliminated the statutory Medicaid drug rebate cap beginning January 1, 2024. The rebate was previously capped at 100% of a drug's average manufacturer price.

Further, there has been heightened governmental scrutiny recently over pharmaceutical pricing practices in light of the rising cost of prescription drugs and biologics. Such scrutiny has resulted in several 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, rebates and price negotiation for pharmaceutical products. Most recently, on August 16, 2022, the Inflation Reduction Act of 2022 (the "IRA"), was signed into law. Among other things, the IRA requires manufacturers of certain drugs to engage in price negotiations with Medicare (beginning in 2026), with prices that can be negotiated subject to a cap; imposes rebates under Medicare Part B and Medicare Part D to penalize price increases that outpace inflation (first due in 2023); and replaces the Part D coverage gap discount program with a new discounting program (beginning in 2025). The IRA permits the Secretary of the HHS to implement many of these provisions through guidance, as opposed to regulation, for the initial years. On August 29, 2023, HHS announced the list of the first ten drugs that will be subject to price negotiations. HHS has issued and will continue to issue guidance implementing the IRA, although the Medicare drug price negotiation program is currently subject to legal challenges. For that and other reasons, it is currently unclear how the IRA will be effectuated. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical product and medical device 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 medical devices to purchase and which suppliers will be included in their prescription drug and other healthcare programs.

We expect that other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria, new payment methodologies and in additional downward pressure on the price that we or our collaborators may receive for any approved or cleared product. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we or our collaborators are slow or unable to adapt to new requirements or policies, or if we or our collaborators are not able to maintain regulatory compliance, any of our product candidates may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability, which would adversely affect our business.

In the EU, similar developments may affect our ability to profitably commercialize our product candidates, if approved. In addition to continuing pressure on prices and cost containment measures, legislative developments at the EU or member state level may result in significant additional requirements or obstacles that may increase our operating costs. The delivery of healthcare in the EU, including the establishment and operation of health services and the pricing and reimbursement of medicines, is almost exclusively a matter for national, rather than EU, law and policy. National governments and health service providers have different priorities and approaches to the delivery of health care and the pricing and reimbursement of products in that context. In general, however, the healthcare budgetary constraints in most EU member states have resulted in restrictions on the pricing and reimbursement of medicines by relevant health service providers. Coupled with ever-increasing EU and national regulatory burdens on those wishing to develop and market products, this could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to commercialize our product candidates, if approved. In markets outside of the United States and EU, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies.

On December 13, 2021, Regulation No 2021/2282 on Health Technology Assessment ("HTA") amending Directive 2011/24/EU, was adopted. While the Regulation entered into force in January 2022, it will only begin to apply from January 2025 onwards, with preparatory and implementation-related steps to take place in the interim. Once applicable, it will have a phased implementation depending on the concerned products. The Regulation intends to boost cooperation among EU member states in assessing health technologies, including new medicinal products, and provide the basis for cooperation at the EU level for joint clinical assessments in these areas. It will permit EU member states to use common HTA tools, methodologies, and procedures across the EU, working together in four main areas, including joint clinical assessment of the innovative health technologies with the highest potential impact for patients, joint scientific consultations whereby developers can seek advice from HTA authorities, identification of emerging health technologies to identify promising technologies early, and continuing voluntary cooperation in other areas. Individual EU member states will continue to be responsible for assessing non-clinical (e.g., economic, social, ethical) aspects of health technology, and making decisions on pricing and reimbursement.

Even if we obtain regulatory approval for any products that we develop alone or with collaborators, such products will remain subject to ongoing regulatory requirements, which may result in significant additional expense.

Even if products we develop alone or with collaborators receive regulatory approval, they will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, distribution, storage, advertising, promotion, sampling, record-keeping and submission of safety and other post-market information, among other things. Any regulatory approvals received for such products may also be subject to limitations on the approved indicated uses for which they may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing and surveillance studies. For example, the holder of an approved BLA in the United States is obligated to monitor and report adverse events and any failure of a product to meet the specifications in the BLA. FDA guidance advises that patients treated with some types of gene therapy undergo follow-up observations for potential adverse events for as long as 15 years. Similarly, in the EU, pharmacovigilance obligations are applicable to all medicinal products. In addition to those, holders of a marketing authorization for gene or cell therapy products must detail, in their application, the measures they envisage to ensure follow-up of the efficacy and safety of these products. In cases of particular concern, marketing authorization holders for gene or cell therapy products in the EU may be required to design a risk management system with a view to identifying, preventing or minimizing risks and may be obliged to carry out post-marketing studies. In the United States, the holder of an approved BLA must also submit new or supplemental applications and obtain FDA approval for certain changes to the approved product, product labeling or manufacturing process. Similar provisions apply in the EU. Advertising and promotional materials must comply with FDA rules and are subject to FDA review, in addition to other potentially applicable federal and state laws. Similarly, in the EU any promotion of medicinal products is highly regulated and, depending on the specific jurisdiction involved, may require prior vetting by the competent national regulatory authority.

In addition, product manufacturers and their facilities are subject to payment of user fees and continual review and periodic inspections by the FDA and other regulatory authorities for compliance with GMP requirements and adherence to commitments made in the BLA or foreign marketing application. If we, our collaborators or a regulatory agency discovers previously unknown problems with a product such as adverse events of unanticipated severity or frequency or problems with the facility where the product is manufactured or disagrees with the promotion, marketing or labeling of that product, a regulatory agency may impose restrictions relative to that product, the manufacturing facility or us or our collaborators, including requiring recall or withdrawal of the product from the market or suspension of manufacturing.

Moreover, if any of our product candidates are approved, our product labeling, advertising, promotion and distribution will be subject to regulatory requirements and continuing regulatory review. The FDA and foreign regulatory authorities strictly regulate the promotional claims that may be made about drug products. In particular, a product may not be promoted for uses that are not approved by the FDA and foreign regulatory authorities as reflected in the product's approved labeling.

If we or our collaborators fail to comply with applicable regulatory requirements following approval of any potential products we may develop, authorities may:

- issue an untitled enforcement letter or a warning letter asserting a violation of the law;
- seek an injunction, impose civil and criminal penalties, and impose monetary fines, restitution or disgorgement of profits or revenues;
- suspend or withdraw regulatory approval;
- suspend or terminate any ongoing clinical trials or implement requirements to conduct post-marketing studies or clinical trials;
- refuse to approve a pending BLA or comparable foreign marketing application (or any supplements thereto) submitted by us or our collaborators;
- restrict the labeling, marketing, distribution, use or manufacturing of products;
- seize or detain products or otherwise require the withdrawal or recall of products from the market;
- refuse to approve pending applications or supplements to approved applications that we or our collaborators submit;
- refuse to permit the import or export of products; or
- refuse to allow us or our collaborators to enter into government contracts.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response and could generate negative publicity. The occurrence of any event or penalty described above may inhibit our or our collaborators' ability to commercialize products and our ability to generate revenues.

In addition, the FDA's policies, and policies of foreign regulatory agencies, may change, and additional regulations may be enacted that could prevent, limit or delay regulatory approval of product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. If we or our collaborators are slow or unable to adapt to changes in existing requirements or the adoption of new requirements, or if we or our collaborators are unable to maintain regulatory compliance, we or they may be subject to enforcement action and we may not achieve or sustain profitability.

It is currently unclear to what extent the United Kingdom ("UK") will seek to align its regulations with the EU. The UK regulatory framework in relation to clinical trials is derived from existing EU legislation (as implemented into UK law, through secondary legislation).

On January 17, 2022, the UK MHRA launched an eight-week consultation on reframing the UK legislation for clinical trials. The consultation closed on March 14, 2022 and aims to streamline clinical trials approvals, enable innovation, enhance clinical trials transparency, enable greater risk proportionality, and promote patient and public involvement in clinical trials. The MHRA published its consultation outcome on March 21, 2023 in which it confirmed that it would update the existing legislation. The resulting legislative changes, which are yet to be published, will ultimately determine the extent to which the UK regulations align with the (EU) CTR. Under the terms of the Protocol on Ireland/Northern Ireland, provisions of the CTR which relate to the manufacture and import of investigational medicinal produces and auxiliary medicinal products apply in Northern Ireland. A decision by the UK Government not to closely align its regulations with the new approach that has been adopted in the EU may have an effect on the cost of conducting clinical trials in the UK as opposed to other countries.

The FDA and other regulatory agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. If we are found or alleged to have improperly promoted off-label uses, we may become subject to significant liability.

The FDA and other regulatory agencies strictly regulate the promotional claims that may be made about prescription products, as our product candidates would be, if approved. In particular, a product may not be promoted for uses that are not approved by the FDA or such other regulatory agencies as reflected in the product's approved labeling. If we are found to have promoted such off-label uses, we may become subject to significant liability. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed. If we cannot successfully manage the promotion and avoid off-label promotion of our product candidates, if approved, we could become subject to significant liability, which would materially adversely affect our business and financial condition.

Disruptions at the FDA and other government agencies caused by funding shortages or global health concerns could hinder their ability to hire, retain or deploy key leadership and other personnel, or otherwise prevent new or modified products from being developed, approved or commercialized in a timely manner or at all, which could negatively impact our business.

The ability of the FDA and foreign regulatory authorities to review and approve new products can be affected by a variety of factors, including government budget and funding levels, statutory, regulatory and policy changes, the FDA's or foreign regulatory authorities' ability to hire and retain key personnel and accept the payment of user fees, and other events that may otherwise affect the FDA's or foreign regulatory authorities' ability to perform routine functions. Average review times at the FDA and foreign regulatory authorities have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable. Disruptions at the FDA and other agencies, such as the EMA following its relocation to Amsterdam and resulting staff changes, may also slow the time necessary for new biologics or modifications to approved biologics to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last several years, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities.

Separately, in response to the COVID-19 pandemic, the FDA postponed most inspections of domestic and foreign manufacturing facilities at various points. Even though the FDA has since resumed standard inspection operations, any resurgence of the virus or emergence of new variants may lead to further inspectional or administrative delays. If a prolonged government shutdown occurs, or if global health concerns prevent the FDA or other regulatory authorities from conducting their regular inspections, reviews or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

Even if any product we develop alone or with collaborators receives marketing approval, such product may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

The commercial success of any potential therapeutic products we develop alone or with collaborators will depend upon their degree of market acceptance by physicians, patients, third-party payors and others in the medical community. Even if any potential therapeutic products we develop alone or with collaborators receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, healthcare payors and others in the medical community. The degree of market acceptance of any product we develop alone or with collaborators, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of such product as demonstrated in clinical trials;
- the prevalence and severity of any side effects;
- the clinical indications for which the product is approved by FDA or other regulatory authorities;
- product labeling or product insert requirements of the FDA or other regulatory authorities, including any limitations or warnings contained in a product's approved labeling;
- public attitudes regarding genome editing technologies;
- our and any collaborators' ability to educate the medical community about the safety and effectiveness of the product;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies, as well as their willingness to accept a therapeutic intervention that involves the editing of the patient's genome;
- the potential and perceived advantages compared to alternative treatments;
- convenience and ease of administration compared to alternative treatments;
- any restrictions on the use of such product together with other treatments or products;
- market introduction of competitive products;
- publicity concerning such product or competing products and treatments;
- the ability to offer such product for sale at a competitive price;
- the strength of marketing and distribution support; and
- sufficient third-party coverage and adequate reimbursement.

If any products we develop alone or with collaborators do not achieve an adequate level of acceptance, we may not generate significant product revenues, and we may not become profitable.

If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market any products we develop alone or with collaborators, the commercialization of such products may not be successful if and when they are approved.

We do not have a sales or marketing infrastructure and, as a company, have no experience in the sale, marketing or distribution of biopharmaceutical or other commercial products. To achieve commercial success for any approved products for which we retain sales and marketing responsibilities, we must either develop a sales and marketing organization or outsource these functions to third parties. In the future, we may choose to build a focused sales, marketing and commercial support infrastructure to sell, or participate in sales activities with our collaborators for, certain product candidates if and when they are approved.

There are risks involved with both establishing our own commercial capabilities and entering into arrangements with third parties to perform these services. For example, restricted or closed distribution channels may make it difficult to distribute products to segments

of the patient population, and the lack of complementary medicines to be offered by sales personnel may put us at a competitive disadvantage relative to companies with more extensive product lines.

Recruiting and training a sales force or reimbursement specialists are expensive and time consuming and could delay any product launch. If the commercial launch of a product for which we recruit a sales force and establish marketing and other commercialization capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses, and our investment would be lost if we cannot retain or reposition our commercialization personnel. Factors that may inhibit our efforts to commercialize products on our own include:

- unforeseen costs and expenses associated with creating an independent commercialization organization;
- our inability to recruit, train, retain and effectively manage adequate numbers of effective sales, marketing, customer service and other support personnel, including for reimbursement or medical affairs;
- the inability of sales personnel to educate adequate numbers of physicians on the benefits of our future medicines; and
- the inability of reimbursement professionals to negotiate arrangements for formulary access, reimbursement and other acceptance by payors.

If we choose to enter into arrangements with third parties to perform sales, marketing, commercial support or distribution services, we may not be successful in entering into such arrangements or may be unable to do so on terms that are favorable to us. Entering into such third-party arrangements may subject us to a variety of risks, including:

- product revenues or profitability to us being lower than if we were to market and sell any products we or our collaborators may develop ourselves;
- our inability to exercise direct control over sales and marketing activities and personnel;
- failure of the third parties to devote necessary resources and attention to, or other inability to, sell and market any products we or our collaborators may develop;
- potential disputes with third parties concerning sales and marketing expenses, calculation of royalties and sales and marketing strategies; and
- unforeseen costs and expenses associated with sales and marketing.

If we do not establish effective commercialization capabilities, either on our own or in collaboration with third parties, we will not be successful in commercializing any of our product candidates that may receive approval.

If the market opportunities for any products we develop alone or with collaborators are smaller than our estimates, or if we are unable to successfully identify enough patients, our revenues may be adversely affected.

We focus some of our research and product development on treatments for rare genetic diseases. Our and our collaborators' projections of both the number of people who have these diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with product candidates we may develop, are based on estimates. These estimates may prove to be incorrect, and new studies may change the estimated incidence or prevalence of these diseases. The number of patients in the United States, Europe and elsewhere may turn out to be lower than expected, and patients may not be amenable to treatment with products that we may develop alone or with collaborators, or may become increasingly difficult to identify or gain access to, any of which would decrease our ability to realize revenue from any such products for such diseases.

The successful commercialization of potential products will depend in part on the extent to which governmental authorities and health insurers establish coverage, and the adequacy of reimbursement levels and pricing policies, and failure to obtain or maintain coverage and adequate reimbursement for any potential products that may receive approval, could limit marketability of those products and decrease our ability to generate revenue.

The availability of coverage and adequacy of reimbursement by government healthcare programs such as Medicare and Medicaid, private health insurers and other third-party payors is essential for most patients to be able to afford prescription medications such as the potential therapeutic products we develop alone or with collaborators. The ability to achieve acceptable levels of coverage and

reimbursement for any potential products that may be approved by governmental authorities will have an effect on our and our collaborators' ability to successfully commercialize such products. Even if products we develop alone or with collaborators obtain coverage by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. If coverage and reimbursement in the United States, the EU or elsewhere is not available for any products we develop alone or with collaborators that may be approved, or any reimbursement that may become available is decreased or eliminated in the future, we and our collaborators may be unable to commercialize such products.

There is significant uncertainty related to the insurance coverage and reimbursement of newly approved drugs and biologics. In the United States, third-party payors, including private and governmental payors, such as the Medicare and Medicaid programs, play an important role in determining the extent to which new drugs and biologics will be covered. In August 2019, the CMS published its decision to cover autologous treatment for cancer with T-cells expressing at least one CAR when administered at healthcare facilities enrolled in the FDA risk evaluation and mitigation strategies and used for an FDA-approved indication or for other uses when the product has been FDA-approved and the use is supported in one or more CMS-approved compendia. The Medicare and Medicaid programs increasingly are used as models in the United States for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs and biologics. Some third-party payors may require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers who use such therapies. We cannot predict at this time what third-party payors will decide with respect to the coverage and reimbursement for any product that we develop alone or with collaborators.

No uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that will require us or our collaborators to provide scientific and clinical support for the use of any potential products that may be approved to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases on short notice. Obtaining coverage and adequate reimbursement for products we develop alone or with collaborators may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. In certain instances, payors may not separately reimburse for the product itself, but only for the treatments or procedures in which such product is used. A decision by a third-party payor not to cover or separately reimburse for products that we develop alone or with collaborators or procedures using such products, could reduce physician utilization of any such products that may receive approval.

Third-party payors are increasingly challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs or biologics when an equivalent generic drug, biosimilar or a less expensive therapy is available. If approved, it is possible that a third-party payor may consider any products that we develop alone or with collaborators as substitutable and only offer to reimburse patients for the less expensive product. Pricing of existing third-party therapeutics may limit the amount we will be able to charge for any products that may receive approval even if we or our collaborators show improved efficacy or improved convenience of administration such products. These payors may deny or revoke the reimbursement status of a given product or establish prices for new or existing marketed products at levels that are too low to enable us to realize an appropriate return on our investment in the product. If reimbursement is not available or is available only at limited levels, we or our collaborators may not be able to successfully commercialize any of the products that we develop, even if approved, and we may not be able to obtain a satisfactory financial return on them. Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for any products we develop alone or with collaborators that may receive approval. We expect to experience pricing pressures in connection with the sale of any products that may receive approval due to the trend toward managed health care, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and biologics and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe and elsewhere have and will continue to put pressure on the pricing and usage of any products we develop alone or with collaborators that may receive approval. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. Other countries allow companies to fix their own prices for medical products, but monitor and control company profits. Additional international price controls or other changes in pricing regulation could restrict the amount that we or our collaborators are able to charge for products that we develop that may receive approval. Accordingly, in markets outside the United States, the reimbursement

for such products may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenue and profits.

Our product candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated.

If we are successful in achieving regulatory approval to commercialize any biologic product candidate we develop alone or with collaborators, it may face competition from biosimilar products. In the United States, our product candidates are regulated by the FDA as biologic products subject to approval under the BLA pathway. The BPCIA created an abbreviated pathway for the approval of biosimilar and interchangeable biologic products following the approval of an original BLA. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an existing brand product. Under the BPCIA, an application for a biosimilar product may not be submitted until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years after the reference product was first licensed by the FDA. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product.

We believe that any of our product candidates that are approved as biological products under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider such product candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. If competitors are able to obtain marketing approval for biosimilars referencing any products that we develop alone or with collaborators that may be approved, such products may become subject to competition from such biosimilars, with the attendant competitive pressure and potential adverse consequences.

Jurisdictions in addition to the U.S. have established abbreviated pathways for regulatory approval of biological products that are biosimilar to earlier approved reference products. For example, the EU has had an established regulatory pathway for biosimilars since 2006.

Risks Related to Our Organization, Structure and Operations

We may experience difficulties in managing the needs of our business, which could disrupt our operations.

As of December 31, 2023, we had 109 full-time employees. Our future financial performance, ability to develop and commercialize product candidates alone or with collaborators and ability to compete effectively will depend in part on our ability to effectively manage the then applicable needs of our business. We may have difficulty identifying, hiring and integrating new personnel. Many of the biotechnology companies that we compete against for qualified personnel and consultants have greater financial and other resources, different risk profiles and a longer history than we do. If we are unable to continue to attract and retain high-quality personnel and consultants, the rate and success at which we can identify and develop product candidates, enter into collaborative arrangements and otherwise operate our business will be limited.

Management may need to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing our personnel needs. Due to our limited financial resources and the limited experience of our management team in managing a company with anticipated growth, we may not be able to effectively manage the expected demands of our operations or recruit and train additional qualified personnel. Moreover, addressing our personnel needs may lead to significant costs and may divert our management and business development resources from other projects, such as the development of product candidates. If we are not able to effectively manage our operations, it may result in weaknesses in our infrastructure, increase our expenses more than expected, or give rise to operational mistakes, loss of business opportunities, loss of employees and reduced productivity. Our future financial performance, ability to successfully commercialize any of our product candidates and our ability to compete effectively will depend, in part, on our ability to effectively manage any future growth and then applicable needs.

We may engage in transactions that could disrupt our business, cause dilution to our stockholders or reduce our financial resources.

In the future, we may enter into transactions to acquire or in-license rights to product candidates, products or technologies or that involve the acquisition of or investment in other businesses. If we do identify suitable candidates, we may not be able to enter into such transactions on favorable terms, or at all. Any such acquisitions, investments or in-licenses may not strengthen our competitive position, and these transactions may be viewed negatively by customers or investors. We may decide to incur debt in connection with an acquisition, investment or in-license, which may negatively impact our financial condition and restrict our operations, or issue our common stock or other equity securities to the stockholders of the acquired company, which would reduce the percentage ownership

of our existing stockholders. In addition, we are exposed to risks related to our investments, and we may realize losses in the fair value of our investments or a complete loss of our investments, which would have a negative effect on our financial condition. We could incur losses resulting from undiscovered liabilities of the acquired business that are not covered by the indemnification we may obtain from the sellers of the acquired business. In addition, we may not be able to successfully integrate the acquired personnel, technologies and operations into our existing business in an effective, timely and non-disruptive manner. Such transactions may also divert management attention from day-to-day responsibilities, increase our expenses and reduce our cash available for operations and other uses. We cannot predict the number, timing or size of future acquisitions, investments or in-licenses or the effect that they might have on our operating results.

Our future success depends on our key executives, as well as attracting, retaining and motivating qualified personnel.

We are highly dependent on the research and development experience, technical skills, leadership and continued service of certain members of our management and scientific teams. Although we have formal employment agreements with our executive officers, these agreements do not prevent them from terminating their employment with us at any time. The loss of the services of any of these persons could impede the achievement of our research, development and commercialization objectives.

Recruiting and retaining qualified scientific, clinical, manufacturing and, if we retain commercialization responsibility for any product candidate we develop alone or with collaborators, sales and marketing personnel will also be critical to our success. We may not be able to attract new or successor personnel on acceptable terms or at all given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategies. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. The inability to recruit, integrate, motivate and retain additional skilled and qualified personnel, or the loss of services of certain executives, key employees, consultants or advisors, may impede the progress of our research, development and commercialization objectives and have a material adverse effect on our business.

We are subject to increased costs as a result of operating as a public company, and our management will be required to devote substantial time to maintaining compliance initiatives and corporate governance practices, including establishing and maintaining proper and effective internal control over financial reporting.

As a public company, we have incurred and will continue to incur significant legal, accounting and other expenses that we did not incur as a private company. We are subject to the Securities Exchange Act of 1934, as amended (the "Exchange Act"), including the reporting requirements thereunder, the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of Nasdaq and other applicable securities rules and regulations, including requirements related to the establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to continue to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations have increased our legal and financial compliance costs, making some activities more difficult, time consuming or costly, and increasing demand on our systems and resources.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002 ("Section 404") we are required to furnish a report by our management on our internal control over financial reporting. However, while we remain an emerging growth company and/or a smaller reporting company with less than $100 million in annual revenue in our last fiscal year, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. If we fail to implement the requirements of Section 404 of the Sarbanes-Oxley Act in the required timeframe, we may be subject to sanctions or investigations by regulatory authorities, including the SEC and Nasdaq. Furthermore, if we are unable to conclude that our internal control over financial reporting is effective, our investors may lose confidence in the accuracy and completeness of our financial reports, the market price of our common stock could decline, and we could be subject to sanctions or investigations by regulatory authorities. Failure to implement or maintain an effective internal control system could also restrict our future access to the capital markets.

Our business and operations may suffer in the event of information technology system failures, cyber-attacks or deficiencies in our security, which could materially affect our results.

Despite the implementation of security measures, our information technology systems, as well as those of third parties with which we have relationships, are vulnerable to attack, interruption, and damage from computer viruses and malware (e.g., ransomware), malicious code, cyberattacks, hacking, phishing attacks and other social engineering schemes, denial or degradation of service attacks, natural and manmade disasters, terrorism, war and telecommunication and electrical failures, malfeasance by external or internal parties (e.g., employee theft or misuse, attacks by sophisticated nation-state and nation-state-supported actors), and human error. The aforementioned third parties with which we have relationships include service providers and vendors who provide to us a broad array

of software and other technologies as well as products, services and functions (e.g., human resources, finance, communications, data transmission, risk, compliance) that enable us to conduct, monitor and/or protect our business, operations, systems and data assets.

Attacks upon information technology systems are increasing in their frequency, levels of persistence, sophistication and intensity, and are being conducted by sophisticated and organized groups and individuals with a wide range of motives and expertise. Furthermore, because the technologies used to obtain unauthorized access to, or to sabotage or disrupt, systems change frequently and often are not recognized until launched against a target, we may be unable to anticipate these techniques or implement adequate preventative measures. We may also experience security breaches that may remain undetected for an extended period. Even if identified, we may be unable to adequately investigate or remediate incidents or breaches due to attackers increasingly using tools and techniques that are designed to circumvent controls, to avoid detection, and to remove or obfuscate forensic evidence. We may also face increased cybersecurity risks due to our reliance on internet technology and the number of our and our service providers' employees who work remotely, which may create additional opportunities for cybercriminals to exploit vulnerabilities. The White House, SEC and other regulators have also increased their focus on companies' cybersecurity vulnerabilities and risks. There can be no assurance that our cybersecurity risk management program and processes, including our policies, controls or procedures, will be fully implemented, complied with or effective in protecting our systems and information.

We and certain of our service providers are from time to time, subject to cyberattacks and security incidents. While we do not believe that we have experienced any significant system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our or our critical third parties' operations, it could result in delays and/or material disruptions of our research and development programs, our operations and ultimately, our financial results. For example, the loss of trial data from completed, ongoing or planned trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of or damage to data or applications, or inappropriate disclosure of personal, confidential or proprietary information, we could incur liability due to delays in the development of our product candidates and/or due to reputational harm, litigation, regulatory investigations and enforcement, fines and penalties, or increased costs of compliance and system remediation. Any losses, costs or liabilities may not be covered by, or may exceed the coverage limits of, any or all applicable insurance policies.

Federal, state and foreign legislators and regulators globally have enacted or proposed legal requirements regarding the collection, distribution, disclosure, use, processing, security and storage of personally identifiable information and other types of regulated data, including online information and data online. In the ordinary course of our business, we and third parties with which we have relationships will continue to collect and store sensitive data, including intellectual property, clinical trial data, proprietary business information, personal data and personally identifiable information of our clinical trial subjects and employees, in data centers and on networks. The secure processing, maintenance and transmission of this information is critical to our operations. Despite security measures that we and our critical third parties (e.g., collaborators) implement, our information technology systems, infrastructure and data may be vulnerable to attacks by hackers or internal bad actors, breaches due to human error, technical vulnerabilities, malfeasance or other disruptions. A number of proposed and enacted federal, state and international laws and regulations obligate companies to notify individuals and other parties of security breaches involving particular types of information, which could result from breaches experienced by us or by third parties, including collaborators, vendors, contractors or other organizations with which we have formed relationships that involve the handling or processing of such information.

Even though we may have contractual protections with third parties who process or handle sensitive information, any breach could compromise our or their networks and the information stored there could be accessed, publicly disclosed, lost or stolen. Any such access, disclosure, notifications, follow-up actions related to such a security breach or other loss of information could result in legal claims or proceedings, liability under laws that protect the privacy of personal information and significant costs, including regulatory penalties, fines and legal expenses, and such an event could disrupt our operations, cause us to incur remediation costs, damage our reputation and cause a loss of confidence in us and our or such third parties' ability to conduct clinical trials, which could adversely affect our reputation and delay our research and development programs.

Our insurance policies are expensive and protect us only from some business risks, which leaves us exposed to significant uninsured liabilities.

We do not carry insurance for all categories of risk that our business may encounter. If we obtain marketing approval for any product candidates that we or our collaborators may develop, we intend to acquire insurance coverage to include the sale of commercial products, but we may be unable to obtain such insurance on commercially reasonable terms or in adequate amounts. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination.

Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and clinical trials or regulatory approvals for any of our product candidates could be suspended. We also expect that operating as a public company will make it more expensive for us to obtain director and officer liability insurance, and we

may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors, our board committees or as our executive officers.

Insurance coverage is becoming increasingly expensive, and in the future we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses. We do not know if we will be able to maintain existing insurance with adequate levels of coverage, and any liability insurance coverage we acquire in the future may not be sufficient to reimburse us for any expenses or losses we may suffer. A successful liability claim or series of claims brought against us could require us to pay substantial amounts and cause our share price to decline and, if judgments exceed our insurance coverage, could adversely affect our results of operations and business, including preventing or limiting the development and commercialization of any product candidates that we or our collaborators may develop.

If we or any of our contract manufacturers or other suppliers fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur significant costs.

We and any of our contract manufacturers and suppliers are subject to numerous federal, state and local environmental, health and safety laws, regulations and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment and disposal of hazardous and regulated materials and wastes; the emission and discharge of hazardous materials into the ground, air and water; and employee health and safety. Our operations involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. Our operations also produce hazardous waste. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. Under certain environmental laws, we could be held responsible for costs relating to any contamination at our current or past facilities and at third-party facilities. We also could incur significant costs associated with civil or criminal fines and penalties.

Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research and product development efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes.

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty and general liability insurance policies (under which we currently have an aggregate of approximately $10 million in coverage) specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical trials or regulatory approvals for any product candidate we develop alone or with collaborators could be suspended, which could have a material adverse effect on our business and financial condition.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws, regulations and permitting requirements, and any third-party contract manufacturers and suppliers we engage will also be subject to such current and future regulations and requirements. These current or future laws, regulations and permitting requirements may impair our research, development or production efforts. Failure to comply with these laws, regulations and permitting requirements, either by us or by any third-party contract manufacturers and suppliers we engage, also may result in substantial fines, penalties or other sanctions or business disruption.

Our business operations, including our current and future relationships with third parties, may expose us to penalties for potential misconduct or improper activity, including non-compliance with regulatory standards and requirements.

Complex laws constrain our business and the financial arrangements and relationships through which we conduct our operations, including how we may research, market, sell and distribute product candidates alone or with collaborators. We are exposed to the risk of fraud or other misconduct by our employees, consultants and collaborators and, if we or our collaborators commence clinical trials and proceed to commercialization, our principal investigators and commercial partners, as well as healthcare professionals, third-party payors, patient organizations and customers. For example, misconduct by these parties could include intentional failures to comply with FDA regulations or the regulations applicable in the EU and other jurisdictions, provide accurate information to the FDA and other regulatory authorities, comply with healthcare fraud and abuse laws and regulations in the United States and abroad, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, false and/or misleading statements, corruption of government officials, self-dealing and other abusive practices. These laws

and regulations restrict or prohibit a wide range of pricing, discounting, marketing, promotion, sales commission and customer incentive programs and other business arrangements. Such misconduct also could involve the improper use or misrepresentation of information obtained in the course of clinical trials, creating fraudulent data in preclinical studies or clinical trials, illegal misappropriation of study materials or other property, or improper interactions with the FDA or other regulatory authorities, which could result in regulatory sanctions and cause serious harm to our or our collaborators' reputations.

Ensuring that our internal operations and current and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. Additionally, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, additional reporting requirements and oversight if subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to similar penalties, such as criminal, civil or administrative sanctions, including exclusions from government-funded healthcare programs and imprisonment, which could affect our ability to operate our business. Further, defending against any such actions can be costly and time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

We have adopted policies applicable to all of our employees, but it is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent such activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from government investigations or other actions or lawsuits stemming from a failure to comply with applicable laws or regulations. Additionally, we are subject to the risk that a person could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could result in the imposition of any of the penalties discussed above and have a significant impact on our business and financial condition.

We are subject to complex tax rules relating to our business, and any audits, investigations or tax proceedings could have a material adverse effect on our business, results of operations and financial condition.

We are subject to income and non-income taxes in the United States. Income tax accounting often involves complex issues, and judgment is required in determining our provision for income taxes and other tax liabilities. We may operate in foreign jurisdictions in the future. We could become subject to income and non-income taxes in foreign jurisdictions as well. In addition, many jurisdictions have detailed transfer pricing rules, which require that all transactions with non-resident related parties be priced using arm's length pricing principles within the meaning of such rules. The application of withholding tax, goods and services tax, sales taxes and other non-income taxes is not always clear and we may be subject to tax audits relating to such withholding or non-income taxes. We believe that our tax positions are reasonable and our tax reserves are adequate to cover any potential liability. We are currently not subject to any tax audits. However, the Internal Revenue Service ("IRS") or other taxing authorities may disagree with our positions. If the IRS or any other tax authorities were successful in challenging our positions, we may be liable for additional tax and penalties and interest related thereto or other taxes, as applicable, in excess of any reserves established therefor, which may have a significant impact on our results and operations and future cash flow.

We may not be able to utilize all of our net operating loss carryforwards.

We have incurred substantial losses during our history, do not expect to become profitable in the near future, and we may not achieve profitability. As of December 31, 2023, we had U.S. federal and state net operating loss ("NOL") carryforwards of $195.0 million and $166.8 million, respectively. Our federal NOL carryforwards carry forward indefinitely. Our state NOL carryforwards begin to expire in 2027. In addition, as of December 31, 2023, we have U.S. federal and state R&D tax credits of $17.2 million and an amount less than $0.1 million available to offset future U.S. federal and state income taxes, which begin to expire in 2029 and 2030, respectively. As of December 31, 2023, we had federal Orphan Drug credits of $13.5 million, which begin to expire in 2038.

Changes in tax laws or regulations may adversely impact our ability to utilize all, or any, of our NOL carryforwards. For example, legislation enacted in 2017, informally titled the Tax Cuts and Jobs Act (the "TCJA"), significantly revised the Internal Revenue Code of 1986, as amended (the "Code"). Future guidance from the IRS and other tax authorities with respect to the TCJA may affect us, and certain aspects of the TCJA could be repealed or modified in future legislation. For example, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") modified certain provisions of the TCJA. Under the CARES Act, NOLs arising in a tax

year beginning after December 31, 2017, and before January 1, 2021, generally may now be carried back five years. Under the TCJA, as modified by the CARES Act, unused losses generated in taxable years ending after December 31, 2017 will not expire and may be carried forward indefinitely, but the deductibility of such NOLs in tax years beginning after December 31, 2020, is limited to 80% of taxable income. It is uncertain if and to what extent various states will conform to the to the TCJA or the CARES Act.

As of December 31, 2023, we have a valuation allowance for the full amount of our net deferred tax assets as the realization of the net deferred tax assets is not determined to be more likely than not. In addition, Sections 382 and 383 of the Code limit a corporation's ability to utilize its NOL carryforwards and certain other tax attributes (including research credits) to offset any future taxable income or tax if the corporation experiences a cumulative ownership change of more than 50% over any rolling three-year period. State NOL carryforwards (and certain other tax attributes) may be similarly limited. A Section 382 ownership change can therefore result in significantly greater tax liabilities than a corporation would incur in the absence of such a change, and any increased liabilities could adversely affect the corporation's business, results of operations, financial condition and cash flow. We have not yet determined if any prior change in the ownership of our equity or any change in such ownership in connection with our IPO, would trigger a Section 382 ownership change. It is possible that such a Section 382 ownership change has already occurred in prior periods. Furthermore, additional ownership changes may occur in the future as a result of events over which we will have little or no control, including purchases and sales of our equity by our 5% stockholders, the emergence of new 5% stockholders, additional equity offerings or redemptions of our stock or certain changes in the ownership of any of our 5% stockholders. As a result, our pre-2018 NOL carryforwards (and research tax credits) may expire prior to being used, and our NOL carryforwards and tax credits generated in 2018 and thereafter will be subject to a percentage limitation, upon an ownership change. Similar provisions of state tax law may also apply to limit our use of accumulated state tax attributes. As a result, even if we attain profitability, we may be unable to use all or a material portion of our NOLs and other tax attributes, which could adversely affect our future cash flows.

Risks Related to Our Reliance on Third Parties

We have entered into significant arrangements with collaborators and expect to depend on collaborations with third parties for certain research, development and commercialization activities, and if any such collaborations are not successful, it may harm our business and prospects.

We have sought in the past, and anticipate that we will continue to seek in the future, third-party collaborators for the research, development and commercialization of certain product candidates and the research and development of certain technologies. For example, we are party to the Prevail Agreement and Novartis Agreement. Under these agreements, we are focused on research and development of *in vivo* gene editing products that utilize or incorporate our ARCUS nucleases. Our potential collaborators for other product research and development arrangements likely include large and mid-size pharmaceutical and biotechnology companies, and our potential collaborators for other technology research and development arrangements likely include universities and other research institutions.

Working with collaborators poses several significant risks. We have limited control over the amount and timing of resources that our collaborators dedicate to the product candidates or technologies we may seek to develop with them. A variety of factors may impact resource allocation decisions of collaborators, such as study or trial results, changes in the collaborator's strategic focus, turnover in personnel responsible for the development activities, financial capacity or external factors such as a business combination or change in control that diverts resources or creates competing priorities. Collaboration agreements may not lead to development or commercialization of product candidates or the development of technologies in the most efficient manner or at all. Resource allocation and other developmental decisions made by our collaborators may result in the delay or termination of research programs, studies or trials, repetition of or initiation of new studies or trials or provision of insufficient funding or resources for the completion of studies or trials or the successful marketing and distribution of any product candidates that may receive approval. Collaborators could independently develop, or develop with third parties, product candidates or technologies that compete directly or indirectly with our product candidates or technologies if the collaborators believe that competitive products or technologies are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours. Collaborators may not properly obtain, maintain, enforce or defend our intellectual property or proprietary rights or may use our proprietary information in such a way that could jeopardize or invalidate our proprietary information or expose us to potential litigation. Disputes may arise between us and our collaborators that result in the delay or termination of the research, development or commercialization activities or that result in costly litigation or arbitration that diverts management attention and resources.

Our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. If our collaborations do not result in the successful development and commercialization of product candidates or technologies, or if one of our collaborators terminates its agreement with us, we may not receive any future funding or milestone or royalty payments under the collaboration. If we do not receive the funding we expect under these agreements, our development of product candidates or technologies could be delayed, and we may need additional resources to develop such product candidates or technologies. For example, we waived earned, but unpaid, milestone payments in connection with

the termination of the Servier Agreement. If any of our collaborators terminates its agreement with us, we may be unable to find a suitable replacement collaborator or attract new collaborators and may need to raise additional capital to pursue further development or commercialization of the applicable product candidates or technologies. These events could delay development programs, negatively impact the perception of our company in business and financial communities or cause us to have to cease development of the product candidate covered by the collaboration arrangement. Failure to develop or maintain relationships with any current collaborators could result in the loss of opportunity to work with that collaborator or reputational damage that could impact our relationships with other collaborators in the relatively small industry communities in which we operate. Moreover, all of the risks relating to product development, regulatory approval and commercialization described in this Annual Report on Form 10-K apply to the activities of our collaborators. If our existing collaboration agreements or any collaborative or strategic relationships we may establish in the future are not effective and successful, it may damage our reputation and business prospects, delay or prevent the development and commercialization of product candidates and inhibit or preclude our ability to realize any revenues.

If we are not able to establish collaborations on commercially reasonable terms, we may have to alter our research, development and commercialization plans.

Our research and product development programs and the potential commercialization of any product candidates we develop alone or with collaborators will require substantial additional cash to fund expenses, and we expect continuing to seek collaborative arrangements with others in connection with the development and potential commercialization of current and future product candidates or the development of ancillary technologies. We face significant competition in establishing relationships with appropriate collaborators. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. Whether we reach a definitive agreement for a collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include, among other things and as applicable for the type of potential product or technology, an assessment of the opportunities and risks of our technology, the design or results of studies or trials, the likelihood of approval, if necessary, by the FDA or similar regulatory authorities outside the United States, the potential market for the subject product candidate, the costs and complexities of manufacturing and delivering such product candidate to patients, the potential of competing products and technologies and industry and market conditions generally.

Current or future collaborators may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such a collaboration could be more attractive than the one with us. Additionally, we may be restricted under existing collaboration agreements from entering into future agreements on certain terms or for certain development activities with potential collaborators. For example, we have granted exclusive rights or options to Prevail and Novartis for certain targets, and during the term of our collaboration agreements we will be restricted from granting rights to other parties to use our ARCUS technology to pursue potential products that address those targets. Similarly, our collaboration agreements have in the past and may in the future contain non-competition provisions that could limit our ability to enter into strategic collaborations with future collaborators.

Collaborations are complex and time-consuming to negotiate and document. We may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we do enter into additional collaboration agreements, the negotiated terms may force us to relinquish rights that diminish our potential profitability from development and commercialization of the subject product candidates or others. If we are unable to enter into additional collaboration agreements, or to maintain existing collaborations, we may have to curtail the research and development of the product candidate or technology for which we are seeking to collaborate, reduce or delay research and development programs, delay potential commercialization timelines, reduce the scope of any sales or marketing activities or undertake research, development or commercialization activities at our own expense. For example, in January 2023, we announced that, based on our new prioritized focus, as well as the evolving treatment paradigm for PH1, we have decided to look for a partner in the kidney disease arena for further potential development of PBGENE-PH1 and will no longer develop the program on its own. If we are unable to enter into an appropriate collaboration with respect to PH1 on a timely basis, on acceptable terms, or at all, we may choose to cease related research and development activities. If we elect to increase our expenditures to fund research, development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all.

We rely on third parties to conduct, supervise and monitor our clinical trials and some aspects of our research and preclinical testing, and if those third parties do not successfully carry out their contractual duties, comply with regulatory requirements, or otherwise perform in a satisfactory manner, we may not be able to obtain regulatory approval or commercialize product candidates, or such approval or commercialization may be delayed, and our business may be substantially harmed.

We rely on medical institutions, universities, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct preclinical studies and future clinical trials for our product candidates. Nevertheless, we will be responsible for ensuring that each of our studies and trials is conducted in accordance with the applicable protocol, legal and regulatory requirements and scientific standards, and our reliance on such third parties will not relieve us of our regulatory responsibilities.

Although we intend to design the trials for our product candidates either alone or with collaborators, third parties may conduct all of the trials. As a result, many important aspects of our research and development programs, including their conduct and timing, will be outside of our direct control. Our reliance on third parties to conduct future studies and trials will also result in less direct control over the management of data developed through studies and trials than would be the case if we were relying entirely upon our own staff. Communicating with outside parties can also be challenging, potentially leading to mistakes and difficulties in coordinating activities. Outside parties may have staffing difficulties, fail to comply with contractual obligations, experience regulatory compliance issues, undergo changes in priorities, become financially distressed or form relationships with other entities, some of which may be our competitors. We also face the risk of potential unauthorized disclosure or misappropriation of our intellectual property by CROs or other third parties, which may reduce our trade secret protection and allow our potential competitors to access and exploit our proprietary technology. For any violations of laws and regulations during the conduct of our preclinical studies and future clinical trials, we could be subject to warning letters or enforcement action that may include civil penalties up to and including criminal prosecution.

For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with regulations, commonly referred to as GCPs, for conducting, monitoring, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. If we, our collaborators, our CROs or other third parties fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We also are required to register certain ongoing clinical trials and post the results of such completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within certain timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

If our CROs or other third parties do not successfully carry out their contractual duties or obligations, fail to meet expected deadlines, or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for any other reasons, trials for product candidates may be extended, delayed or terminated, and we or our collaborators may not be able to obtain regulatory approval for, or successfully commercialize, any product candidate that we develop. If we are required to repeat, extend the duration of or increase the size of any trials we conduct, it could significantly delay commercialization and require significantly greater expenditures. As a result of any of these factors, our financial results and the commercial prospects for any product candidate that we or our collaborators may develop would be harmed, our costs could increase and our ability to generate revenues could be delayed.

We rely on third parties to supply raw materials or manufacture product supplies that are necessary for the conduct of preclinical studies, clinical trials and manufacturing of our product candidates, and failure by third parties to provide us with sufficient quantities of products, or to do so at acceptable quality levels or prices and on a timely basis, could harm our business.

We are dependent on third parties for the supply of various biological materials, such as cells, cytokines and antibodies, and the manufacture of product supplies, such as media, plasmids, mRNA and AAV viral vectors, that are necessary to produce our product candidates. The supply of these materials could be reduced or interrupted at any time. In such case, identifying and engaging an alternative supplier or manufacturer could result in delay, and we may not be able to find other acceptable suppliers or manufacturers on acceptable terms, or at all. Switching suppliers or manufacturers may involve substantial costs and is likely to result in a delay in our desired clinical and commercial timelines. If we change suppliers or manufacturers for commercial production, applicable regulatory agencies may require us to conduct additional studies or trials. If key suppliers or manufacturers are lost, or if the supply of the materials is diminished or discontinued, we or our collaborators may not be able to develop, manufacture and market product candidates in a timely and competitive manner, or at all. If any of our product candidates receives approval, we will likely need to seek alternative sources of supply of raw materials or manufactured product supplies and there can be no assurance that we will be able to establish such relationships to provide such supplies on commercially reasonable terms or at acceptable quality levels, if at all. If we are unable to identify and procure additional sources of supply that fit our required needs, we could face substantial delays or incur additional costs in procuring such materials. In addition, manufactured product supplies are subject to stringent manufacturing processes and rigorous testing. Delays in the completion and validation of facilities and manufacturing processes of these materials could adversely affect the ability to complete studies or trials and commercialize any product candidates that may receive approval. Furthermore, if our suppliers or manufacturers encounter challenges relating to employee turnover, the supply and manufacturing of our materials could be delayed or adversely affected as such parties seek to hire and train new employees. These factors could cause the delay of studies or trials, regulatory submissions, required approvals or commercialization of product candidates that we or our collaborators may develop, cause us to incur higher costs and prevent us from commercializing products successfully. Furthermore, if our suppliers or manufacturers fail to meet contractual requirements, and we are unable to secure one or more replacements capable of production at a substantially equivalent cost, our or our collaborators' studies or trials may be delayed and we could lose potential revenue.

We may continue to rely on third parties for at least a portion of the manufacturing process of product candidates, and failure by those parties to adequately perform their obligations could harm our business.

We rely on outside vendors for at least a portion of the manufacturing process of product candidates that we or our collaborators may develop. The facilities used by our contract manufacturers to manufacture product candidates must be approved by the FDA or other foreign regulatory agencies pursuant to inspections that will be conducted after we submit an application to the FDA or other foreign regulatory agencies. To the extent that we or our collaborators engage third parties for manufacturing services, we will not control the manufacturing process of, and will be completely dependent on, our contract manufacturing providers for compliance with cGMP requirements for manufacture of the product candidates. We have not yet caused any product candidates to be manufactured or processed on a commercial scale and may not be able to do so. We anticipate making changes as we work to optimize the manufacturing process, and we cannot be sure that even minor changes in the process will result in products that are safe and effective. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or other regulatory authorities, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. In addition, we have no control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market any of our or our collaborators' potential products.

Risks Related to Intellectual Property

Our ability to compete may decline if we do not adequately protect our proprietary rights, and if our proprietary rights do not provide a competitive advantage.

Our commercial success depends upon obtaining and maintaining proprietary rights to our intellectual property estate, including rights relating to ARCUS and to our product candidates, as well as successfully defending these rights against third-party challenges and successfully enforcing these rights to prevent third-party infringement. We will only be able to protect ARCUS and product candidates from unauthorized use by third parties to the extent that valid and enforceable patents cover them. Our ability to obtain and maintain patent protection for ARCUS and our product candidates is uncertain due to a number of factors, including that:

- we may not have been the first to invent the technology covered by our pending patent applications or issued patents;
- we may not be the first to file patent applications covering product candidates, including their compositions or methods of use, as patent applications in the United States and most other countries are confidential for a period of time after filing;
- our compositions and methods may not be patentable;
- our disclosures in patent applications may not be sufficient to meet the statutory requirements for patentability;
- any or all of our pending patent applications may not result in issued patents;
- others may independently develop identical, similar or alternative technologies, products or compositions or methods of use thereof;
- others may design around our patent claims to produce competitive technologies or products that fall outside of the scope of our patents;
- we may fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection;
- we may not seek or obtain patent protection in countries that may eventually provide us a significant business opportunity;
- any patents issued to us may not provide a basis for commercially viable products, may not provide any competitive advantages or may be successfully challenged by third parties;
- others may identify prior art or other bases upon which to challenge and ultimately invalidate our patents or otherwise render them unenforceable; and
- the growing scientific and patent literature relating to engineered endonucleases, including our own patents and publications, may make it increasingly difficult or impossible to patent new engineered nucleases in the future.

Even if we have or obtain patents covering ARCUS or any product candidates or compositions, we and our collaborators may still be barred from making, using and selling such product candidates or technologies because of the patent rights of others. Others may have filed, and in the future may file, patent applications covering compositions, products or methods that are similar or identical to ours, which could materially affect our ability to successfully develop any product candidates or to successfully commercialize any approved products alone or with collaborators. In addition, because patent applications can take many years to issue, there may be currently pending applications unknown to us that may later result in issued patents that we or our collaborators may infringe. These patent applications may have priority over patent applications filed by us.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents have been, and may in the future 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. For example, in 2019, the Patent Trial and Appeal Board (the "PTAB"), of the USPTO initiated two patent interferences involving a family of patents that have been issued to us and a pending patent application filed by a third party. Though the PTAB ultimately found that the third-party patent application did not satisfy written description requirements and rejected the related claims, maintaining the claims in all nine of our patents, any future interference proceedings could result in an adverse outcome, affecting our competitive position, including, without limitation, loss of some or all of our involved patent claims, limiting our ability to stop others from using or commercializing similar or identical technology and products, which could harm our business, financial condition and results of operations. Protecting our patent rights in connection with such proceeding may also be expensive and may involve the diversion of significant management time.

Furthermore, we cannot guarantee that any patents will be issued from any pending or future owned or licensed patent applications. Thus, even if our patent applications issue as patents, they may not issue in a form that will provide us with meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. In addition, third parties may be able to develop products that are similar to, or better than, ours in a way that is not covered by the claims of our patents, or may have blocking patents that could prevent us from marketing our products or practicing our own patented technology. Moreover, patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after it is filed. Various extensions may be available; however the life of a patent, and the protection it affords, is limited. Without patent protection for current or future product candidates, we may be open to competition from generic versions of such potential 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 those we or our collaborators may develop.

Obtaining and maintaining a patent portfolio entails significant expense, including periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and patent applications. These expenditures can be at numerous stages of prosecuting patent applications and over the lifetime of maintaining and enforcing issued patents. We may or may not choose to pursue or maintain protection for particular intellectual property in our portfolio. If we choose to forgo patent protection or to allow a patent application or patent to lapse purposefully or inadvertently, our competitive position could suffer. There are situations, however, in which failure to make certain payments or noncompliance with certain requirements in the patent process can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

Legal action that may be required to enforce our patent rights can be expensive and may involve the diversion of significant management time. There can be no assurance that we will have sufficient financial or other resources to file and pursue infringement claims, which typically last for years before they are concluded. In addition, these legal actions could be unsuccessful and result in the invalidation of our patents, a finding that they are unenforceable or a requirement that we enter into a licensing agreement with or pay monies to a third party for use of technology covered by our patents. We may or may not choose to pursue litigation or other actions against those that have infringed on our patents, or have used them without authorization, due to the associated expense and time commitment of monitoring these activities. If we fail to successfully protect or enforce our intellectual property rights, our competitive position could suffer, which could harm our results of operations.

Many biotechnology companies and academic institutions are currently pursuing a variety of different nuclease systems for genome editing technologies using zinc finger nucleases, TALENs, and CRISPR/Cas9 and the use of those nucleases in cancer immunotherapy, gene therapy and genome editing. Although those nucleases are physically and chemically different from our ARCUS nucleases, those companies and institutions may seek patents that broadly cover aspects of cancer immunotherapy, gene therapy and genome editing using nucleases generally. Such patents, if issued, valid and enforceable, could prevent us from marketing our product candidates, if approved, practicing our own patented technology, or might require us to take a license which might not be available on commercially reasonable terms or at all. While we expect that we will continue to be able to patent our ARCUS nucleases

for the foreseeable future, as the scientific and patent literature relating to engineered endonucleases increases, including our own patents and publications, it may become more difficult or impossible to patent new engineered endonucleases in the future.

If we fail to comply with our obligations in the agreements under which we license intellectual property rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

We are a party to a number of intellectual property license agreements that are important to our business and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that future license agreements will impose, various diligence, milestone payment, royalty and other obligations on us. We may need to outsource and rely on third parties for many aspects of the development, sales and marketing of any products covered under our current and future license agreements. Delay or failure by these third parties could adversely affect the continuation of our license agreements with our licensors. If we fail to comply with any of our obligations under these agreements, or we are subject to a bankruptcy, our licensors may have the right to terminate the license, in which event we would not be able to market any products covered by the license.

In addition, disputes may arise regarding the payment of the royalties due to licensors in connection with our exploitation of the rights we license from them. Licensors may contest the basis of royalties we retained and claim that we are obligated to make payments under a broader basis. In addition to the costs of any litigation we may face as a result, any legal action against us could increase our payment obligations under the respective agreement and require us to pay interest and potentially damages to such licensors.

In some cases, patent prosecution of our licensed technology is controlled solely by the licensor. If such licensor fails to obtain and maintain patent or other protection for the proprietary intellectual property we license from such licensor, we could lose our rights to such intellectual property or the exclusivity of such rights, and our competitors could market competing products using such intellectual property. In that event, we may be required to expend significant time and resources to develop or license replacement technology. If we are unable to do so, we or our collaborators may be unable to develop or commercialize the affected product candidates, which could harm our business significantly. In other cases, we control the prosecution of patents resulting from licensed technology. In the event we breach any of our obligations related to such prosecution, we may incur significant liability to our licensing partners.

For example, our license agreement with Duke (the "Duke License") imposes various payment, royalty and other obligations on us in order to maintain the license. If we fail to make royalty payments or milestone payments required under the Duke License, Duke may terminate the agreement. If we or our affiliates obtain a license from a third party to practice the Duke technology, we must use commercially reasonable efforts to secure a covenant not to sue Duke, or any of its faculty, students, employees or agents, for any research and development efforts conducted at Duke that resulted in the creation of any of its inventions or intellectual property rights arising therefrom. Additionally, because development of the Duke technology was funded in part by the U.S. government, it is subject to certain government rights and obligations, including the requirement that any products sold in the United States based upon such technology be substantially manufactured in the United States.

In addition, our cross-license agreement with Cellectis (the "Cellectis License") imposes various obligations on us in order to maintain the license. In particular, if we participate in or provide assistance to a third party challenging the validity, enforceability and/or patentability of any claim of any patent licensed to us by Cellectis under this agreement, Cellectis may terminate the agreement. The Cellectis License does not provide exclusive rights to use the licensed intellectual property and technology or rights in all relevant fields in which we may wish to develop or commercialize our technology and products in the future. As a result, we are not able to prevent competitors from developing and commercializing competitive products and technology that may use this technology. Additionally, we do not have the right to control the preparation, filing, prosecution, maintenance, enforcement and defense of patents and patent applications covering the technology that we license from Cellectis. Therefore, we cannot be certain that these patents and patent applications will be prepared, filed, prosecuted, maintained and defended in a manner consistent with the best interests of our business. If Cellectis or other licensors fail to prosecute, maintain, enforce and defend the patents subject to such licenses, or lose rights to those patents or patent applications, the rights we have licensed may be reduced or eliminated, and our right to develop and commercialize any of our products that are the subject of such licensed rights could be adversely affected.

If we fail to comply with our obligations under the Duke License or the Cellectis License, or arrangements with any other licensors, our counterparties may have the right to terminate these agreements, in which event we might not be able to develop, manufacture or market any product candidate that is covered by these agreements, which could materially adversely affect the value of any such product candidate. Termination of these agreements or reduction or elimination of our rights under these agreements may result in our having to negotiate new or reinstated agreements with less favorable terms, or cause us to lose our rights under these agreements, including our rights to important intellectual property or technology.

Disputes may arise regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- the amounts of royalties, milestones or other payments due to our licensors;
- the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the license agreement;
- the sublicensing of patent and other rights under our collaborative development relationships;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our collaborators; and
- the priority of invention of patented technology.

Such disputes may be costly to resolve and may divert management's attention away from day-to-day activities. If disputes over intellectual property that we have licensed from third parties prevent or impair our ability to maintain our licensing arrangements on acceptable terms, we or our collaborators may be unable to successfully develop and commercialize the affected product candidates.

Some of our in-licensed intellectual property has been discovered through government funded research and thus may be subject to federal regulations such as "march-in" rights, certain reporting requirements and a preference for U.S.-based companies, and compliance with such regulations may limit our exclusive rights and our ability to contract with foreign manufacturers.

Certain intellectual property rights that have been in-licensed pursuant to the Duke License have been generated through the use of U.S. government funding and are therefore subject to certain federal regulations. As a result, the U.S. government may have certain rights to intellectual property embodied in our current or future product candidates pursuant to the Bayh-Dole Act of 1980, or the Patent and Trademark Law Amendment. These U.S. government rights include a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government has the right, under certain limited circumstances, to require the licensor to grant exclusive, partially exclusive or non-exclusive licenses to any of these inventions to a third party if it determines that (1) adequate steps have not been taken to commercialize the invention, (2) government action is necessary to meet public health or safety needs or (3) government action is necessary to meet requirements for public use under federal regulations (also referred to as "march-in rights"). The U.S. government also has the right to take title to these inventions if the licensor fails to disclose the invention to the government or fails to file an application to register the intellectual property within specified time limits. Intellectual property generated under a government funded program is also subject to certain reporting requirements, compliance with which may require us to expend substantial resources. In addition, the U.S. government requires that any products embodying any of these inventions or produced through the use of any of these inventions be manufactured substantially in the United States, and the Duke License requires that we comply with this requirement. This preference for U.S. industry may be waived by the federal agency that provided the funding if the owner or assignee of the intellectual property can show that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture the products substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible. This preference for U.S. industry may limit our ability to contract with foreign product manufacturers for products covered by such intellectual property. To the extent any of our owned or licensed future intellectual property is also generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

If we do not obtain patent term extension in the United States under the Hatch-Waxman Act and in foreign countries under similar legislation with respect to our product candidates, thereby potentially extending the term of marketing exclusivity for such product candidates, our business may be harmed.

In the United States, a patent that covers an FDA-approved drug or biologic may be eligible for a term extension designed to restore the period of the patent term that is lost during the premarket regulatory review process conducted by the FDA. Depending upon the timing, duration and conditions of FDA marketing approval of our product candidates, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Act, which permits a patent term extension of up to five years for a patent covering an approved product as compensation for effective patent term lost during product development and the FDA regulatory review process. In the EU, our product candidates may be eligible for term extensions based on similar legislation. In either jurisdiction, however, we may not receive an extension if we fail to apply within applicable deadlines, fail to apply prior to expiration of relevant patents or otherwise fail to satisfy applicable requirements. Even if we are granted such extension, the duration of such extension may be less than our request. If we are unable to obtain a patent term extension, or if the term of any such extension is less than our request, the period during which we can enforce

our patent rights for that product will be in effect shortened and our competitors may obtain approval to market competing products sooner. The resulting reduction of years of revenue from applicable products could be substantial.

Patents and patent applications involve highly complex legal and factual questions, which, if determined adversely to us, could negatively impact our patent position.

The patent positions of biopharmaceutical and biotechnology companies and other actors in our fields of business can be highly uncertain and typically involve complex scientific, legal and factual analyses. In particular, the interpretation and breadth of claims allowed in some patents covering biopharmaceutical compositions may be uncertain and difficult to determine, and are often affected materially by the facts and circumstances that pertain to the patented compositions and the related patent claims. The standards of the USPTO and its foreign counterparts are sometimes uncertain and could change in the future. Consequently, the issuance and scope of patents cannot be predicted with certainty. Patents, if issued, may be challenged, invalidated or circumvented. U.S. patents and patent applications may also be subject to interference or derivation proceedings, and U.S. patents may be subject to reexamination proceedings, post-grant review and/or *inter partes* review in the USPTO. International patents may also be subject to opposition or comparable proceedings in the corresponding international patent office, which could result in either loss of the patent or denial of the patent application or loss or reduction in the scope of one or more of the claims of the patent or patent application. In addition, such interference, derivation, reexamination, post-grant review, *inter partes* review and opposition proceedings may be costly. Accordingly, rights under any issued patents may not provide us with sufficient protection against competitive products or processes.

Furthermore, even if not challenged, our patents and patent applications may not adequately protect our technology and any product candidates or products that we develop alone or with collaborators or prevent others from designing their products to avoid being covered by our claims. If the breadth or strength of protection provided by the patent applications we hold with respect to product candidates or potential products is threatened, it could dissuade companies from collaborating with us to develop, and could threaten our or their ability to successfully commercialize, such product candidates. Furthermore, for U.S. applications in which any claim is entitled to a priority date before March 16, 2013, an interference proceeding can be provoked by a third party or instituted by the USPTO in order to determine who was the first to invent any of the subject matter covered by such patent claims.

In addition, changes in, or different interpretations of, patent laws in the United States and other countries may permit others to use our discoveries or to develop and commercialize our technology and product candidates or products without providing any compensation to us, or may limit the scope of patent protection that we are able to obtain. The laws of some countries do not protect intellectual property rights to the same extent as U.S. laws, and those countries may lack adequate rules and procedures for defending our intellectual property rights.

If the patent applications we hold or have in-licensed with respect to our current and future research and development programs and product candidates fail to issue, if their validity, breadth or strength of protection is threatened, or if they fail to provide meaningful exclusivity for our technology or any products and product candidates that we or our collaborators may develop, it could dissuade companies from collaborating with us to develop product candidates, encourage competitors to develop competing products or technologies and threaten our or our collaborators' ability to commercialize future product candidates. Any such outcome could have a material adverse effect on our business.

Third parties may assert claims against us alleging infringement of their patents and proprietary rights, or we may need to become involved in lawsuits to defend or enforce our patents, either of which could result in substantial costs or loss of productivity, delay or prevent the development and commercialization of product candidates, prohibit our use of proprietary technology or sale of potential products or put our patents and other proprietary rights at risk.

Our commercial success depends in part upon our ability to develop, manufacture, market and sell product candidates without alleged or actual infringement, misappropriation or other violation of the patents and proprietary rights of third parties. Litigation relating to infringement or misappropriation of patent and other intellectual property rights in the pharmaceutical and biotechnology industries is common, including patent infringement lawsuits, interferences, oppositions and reexamination proceedings before the USPTO and corresponding international patent offices. The various markets in which we plan to operate are subject to frequent and extensive litigation regarding patents and other intellectual property rights. In addition, many companies in intellectual property-dependent industries, including the biotechnology and pharmaceutical industries, have employed intellectual property litigation as a means to gain an advantage over their competitors. Numerous United States, EU and other internationally issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we and our collaborators are developing product candidates, and as the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the intellectual property rights of third parties. For example, we are aware of certain patents held by third parties relating to the modification of T cells, including the production of CAR T cells. As a result of any patent infringement claims, or in order to avoid any potential infringement claims, we may choose to seek, or be required to seek, a license from the third party, which may require payment of substantial royalties or fees, or require us to grant a cross-license under our intellectual property rights, similar to the cross license we granted Cellectis as part of our patent litigation settlement. These licenses

may not be available on reasonable terms or at all. Even if a license can be obtained on reasonable terms, the rights may be nonexclusive, which would give our competitors access to the same intellectual property rights. If we are unable to enter into a license on acceptable terms, we or our collaborators could be prevented from commercializing one or more product candidates, or forced to modify such product candidates, or to cease some aspect of our business operations, which could harm our business significantly. We or our collaborators might also be forced to redesign or modify our technology or product candidates so that we no longer infringe the third-party intellectual property rights, which may result in significant cost or delay to us, or which redesign or modification could be impossible or technically infeasible. Even if we were ultimately to prevail, any of these events could require us to divert substantial financial and management resources that we would otherwise be able to devote to our business.

Further, if a patent infringement suit is brought against us, our collaborators or our third-party service providers, our development, manufacturing or sales activities relating to the product or product candidate that is the subject of the suit may be delayed or terminated. In addition, defending such claims has in the past and may in the future cause us to incur substantial expenses and, if successful, could cause us to pay substantial damages if we are found to be infringing a third party's patent rights. These damages potentially include increased damages and attorneys' fees if we are found to have infringed such rights willfully. Some claimants may have substantially greater resources than we do and may be able to sustain the costs of complex intellectual property litigation to a greater degree and for longer periods of time than we could. In addition, patent holding companies that focus solely on extracting royalties and settlements by enforcing patent rights may target us. In addition, if the breadth or strength of protection provided by the patents and patent applications we own or in-license is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

We have been and may in the future be subject to third-party claims and similar adversarial proceedings or litigation in other jurisdictions regarding our infringement of the patent rights of third parties. Even if such claims are without merit, a court of competent jurisdiction could hold that these third-party patents are valid, enforceable and infringed, and the holders of any such patents may be able to block or our collaborators' ability to further develop or commercialize the applicable product candidate unless we obtain a license under the applicable patents, or until such patents expire or are finally determined to be invalid or unenforceable. Similarly, if any third-party patents were held by a court of competent jurisdiction to cover aspects of our technologies, compositions, formulations, or methods of treatment, prevention or use, the holders of any such patents may be able to prohibit our use of those technologies, compositions, formulations, methods of treatment, prevention or use or other technologies, effectively blocking our or our collaborators' ability to develop and commercialize the applicable product candidate until such patent expires or is finally determined to be invalid or unenforceable or unless we or our collaborators obtain a license.

Some of our competitors may be able to sustain the costs of complex intellectual property litigation more effectively than we can because they have substantially greater resources. In addition, intellectual property litigation, regardless of its outcome, may cause negative publicity, adversely impact prospective customers, cause product shipment delays or prohibit us from manufacturing, marketing or otherwise commercializing our products, services and technology. Any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise additional funds or otherwise have a material adverse effect on our business, results of operation, financial condition or cash flows.

If we or one of our licensors were to initiate legal proceedings against a third party to enforce a patent covering our technology or a product candidate, the defendant could counterclaim that our patent is invalid or unenforceable. In patent litigation in the United States and Europe, defendant counterclaims alleging invalidity or unenforceability are common. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Third parties might allege unenforceability of our patents because during prosecution of the patent an individual connected with such prosecution withheld relevant information, or made a misleading statement. The outcome of proceedings involving assertions of invalidity and unenforceability during patent litigation is unpredictable. With respect to the validity of patents, for example, we cannot be certain that there is no invalidating prior art of which we and the patent examiner were unaware during prosecution, but that an adverse third party may identify and submit in support of such assertions of invalidity. If a defendant were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on our technology or product candidates. Our patents and other intellectual property rights also will not protect our technology if competitors design around our protected technology without infringing our patents or other intellectual property rights. Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments, and if securities analysts or investors view these announcements in a negative light, the price of our common stock could be adversely affected. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings.

Developments in patent law could have a negative impact on our business.

From time to time, the Supreme Court, other federal courts, the United States Congress, or Congress, the USPTO and similar international authorities may change the standards of patentability, and any such changes could have a negative impact on our business. For example, the America Invents Act (the "AIA"), which was passed in September 2011, resulted in significant changes to the U.S. patent system. An important change introduced by the AIA is that, as of March 16, 2013, the United States transitioned from a "first-to-invent" to a "first-to-file" system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. Under a "first-to-file" system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to a patent on the invention regardless of whether another inventor had made the invention earlier. A third party that files a patent application in the USPTO after that date but before us could therefore be awarded a patent covering an invention of ours even if we made the invention before it was made by the third party. Circumstances could prevent us from promptly filing patent applications on our inventions.

The AIA limited where a patentee may file a patent infringement suit and provided opportunities for third parties to challenge any issued patent in the USPTO. Those provisions apply to all of our U.S. patents, regardless of when issued. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. These provisions could increase the uncertainties and costs surrounding the prosecution of our or our licensors' patent applications and the enforcement or defense of our or our licensors' issued patents.

Additionally, the 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, and there are other open questions under patent law that courts have yet to decisively address. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of our patents and patent applications. Depending on decisions by Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways and could weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. In addition, the European patent system is relatively stringent in the type of amendments that are allowed during prosecution, but the complexity and uncertainty of European patent laws has also increased in recent years. Complying with these laws and regulations could limit our ability to obtain new patents in the future that may be important for our business.

If we were unable to protect the confidentiality of our trade secrets and enforce our intellectual property assignment agreements, our business and competitive position would be harmed.

In addition to patent protection, because we operate in the highly technical field of development of product candidates and products using genome editing, we rely significantly on trade secret protection in order to protect our proprietary technology and processes. Trade secrets are difficult to protect. Our policy is to enter into confidentiality and intellectual property assignment agreements with our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors. These agreements generally require that the other party keep confidential and not disclose to third parties all confidential information developed by the party or made known to the party by us during the course of the party's relationship with us. These agreements also generally provide that inventions conceived by the party in the course of rendering services to us will be our exclusive property. However, we may be unsuccessful in executing such an agreement with each party who in fact conceives or develops intellectual property that we regard as our own. Our 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. In addition, these agreements may be held unenforceable and may not effectively assign intellectual property rights to us. If our trade secrets and other unpatented or unregistered proprietary information are disclosed, we are likely to lose such trade secret protection.

In addition, certain provisions in our intellectual property agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could affect the scope of our rights to the relevant intellectual property or technology, or affect financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

In addition, agreements with third parties typically restrict the ability of such third parties to publish data potentially relating to our trade secrets. Our academic collaborators typically have rights to publish data, provided that we are notified in advance and may delay publication for a specified period of time in order to secure our intellectual property rights arising from the arrangement. In other cases, publication rights are controlled exclusively by us, although in some cases we may share these rights with other parties. We also conduct joint research and product development activities that may require us to share trade secrets under the terms of our research and development collaborations or similar agreements. In addition to contractual measures, we try to protect the confidential nature of

our proprietary information using physical and technological security measures. Such measures may not provide adequate protection for our proprietary information. For example, our security measures may not prevent an employee or consultant with authorized access from misappropriating our trade secrets and providing them to a competitor, and the recourse we have available against such misconduct may not provide an adequate remedy to protect our interests fully. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret can be difficult, expensive and time consuming, and the outcome is unpredictable. In addition, courts outside the United States may be less willing to protect trade secrets. Furthermore, our proprietary information may be independently developed by others in a manner that could prevent legal recourse by us. Competitors could purchase any products we may develop and commercialize and attempt to reverse engineer and replicate some or all of the competitive advantages we derive from our development efforts, willfully infringe our intellectual property rights or design around our protected technology. In addition, our key employees, consultants, suppliers or other individuals with access to our proprietary technology and know-how may incorporate that technology and know-how into projects and inventions developed independently or with third parties. As a result, disputes may arise regarding the ownership of the proprietary rights to such technology or know-how, and any such dispute may not be resolved in our favor. If any of our confidential or proprietary information, including our trade secrets, were to be disclosed or misappropriated, or if any such information was independently developed by a competitor, our competitive position could be harmed and such disclosure or misappropriation could have a material adverse effect on our business.

We will not seek to protect our intellectual property rights in all jurisdictions throughout the world, and we may not be able to adequately enforce our intellectual property rights even in the jurisdictions where we seek protection.

Filing, prosecuting and defending patents on product candidates in all countries and jurisdictions throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States could be less extensive than those in the United States, assuming that rights are obtained in the United States. In-licensing patents covering product candidates in all countries throughout the world may similarly be prohibitively expensive, if such opportunities are available at all. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions.

We generally apply for patents in those countries where we intend to make, have made, use, offer for sale or sell products and where we assess the risk of infringement to justify the cost of seeking patent protection. However, we do not seek protection in all countries where we sell products and we may not accurately predict all the countries where patent protection would ultimately be desirable. If we fail to timely file a patent application in any such country or major market, we may be precluded from doing so at a later date. Competitors may use our technologies in jurisdictions where we do not pursue and obtain patent protection to develop their own products and may export otherwise infringing products to territories where we have patent protection, but where our ability to enforce our patent rights is not as strong as in the United States. These products may compete with any products that we or our collaborators may develop, and our patents or other intellectual property rights may not be effective or sufficient to prevent such competition.

The laws of some other countries do not protect intellectual property rights to the same extent as the laws of the United States. For example, European patent law restricts the patentability of methods of treatment of the human body more than U.S. law does. Patent protection must ultimately be sought on a country-by-country basis, which is an expensive and time-consuming process with uncertain outcomes. Accordingly, we may choose not to seek patent protection in certain countries, and we will not have the benefit of patent protection in such countries. In addition, the legal systems of some countries, particularly developing countries, do not favor the enforcement of patents and other intellectual property protection, especially those relating to biopharmaceuticals or biotechnologies. As a result, many companies have encountered significant difficulties in protecting and defending intellectual property rights in certain jurisdictions outside the United States. Such issues may make it difficult for us to stop the infringement of our patents, if obtained, or the misappropriation of our other intellectual property rights. For example, many other countries, including countries in the EU, have compulsory licensing laws under which a patent owner must grant licenses to third parties. In addition, many countries limit the enforceability of patents against third parties, including government agencies or government contractors. In these countries, patents may provide limited or no benefit. In those countries, we and our licensors may have limited remedies if patents are infringed or if we or our licensors are compelled to grant a license to a third party, which could materially diminish the value of those patents and could limit our potential revenue opportunities. Accordingly, our and our licensors' efforts to enforce intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we own or license.

Europe's planned Unified Patent Court may in particular present uncertainties for our ability to protect and enforce our patent rights against competitors in Europe. In 2012, the European Patent Package, or EU Patent Package, regulations were passed with the goal of providing a single pan-European Unitary Patent and a new European Unified Patent Court, or UPC, for litigation involving European patents. Implementation of the EU Patent Package will likely occur in the first half of 2023. Under the UPC, all European patents, including those issued prior to ratification of the European Patent Package, will by default automatically fall under the jurisdiction of the UPC. The UPC will provide our competitors with a new forum to centrally revoke our European patents, and allow for the possibility of a competitor to obtain pan-European injunctions. It will be several years before we will understand the scope of patent rights that will be recognized and the strength of patent remedies that will be provided by the UPC. Under the EU Patent Package as currently proposed,

we will have the right to opt our patents out of the UPC over the first seven years of the court's existence, but doing so may preclude us from realizing the benefits of the new unified court.

Furthermore, proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, subject our patents to the risk of being invalidated or interpreted narrowly, subject our patent applications to the risk of not issuing or provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded to us, if any, may not be commercially meaningful, while the damages and other remedies we may be ordered to pay such third parties may be significant. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

We may not be successful in obtaining or maintaining necessary rights to product components and processes for our development pipeline through acquisitions and in-licenses.

We have rights, through licenses from third parties and under patents that we own, to the intellectual property to develop the product candidates we are currently developing alone or with collaborators. Because our programs may involve additional product candidates that may require the use of proprietary rights held by third parties, the growth of our business may depend in part on our ability to acquire, in-license or use these proprietary rights. In addition, product candidates may require specific formulations to work effectively and efficiently, and these rights may be held by others. We may be unable to acquire or in-license any compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies, or companies that have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive to develop or commercialize product candidates. These established companies may have a competitive advantage over us due to their size and greater cash resources and clinical development and commercialization capabilities. We may not be able to successfully complete such negotiations and ultimately acquire the rights to the intellectual property surrounding product candidates that we may seek to acquire.

For example, we sometimes collaborate with academic institutions to accelerate our preclinical research or development under written agreements with these institutions. Typically, these institutions provide us with an option to negotiate a license to any of the institution's rights in technology resulting from the strategic alliance. Regardless of such right of first negotiation, we may be unable to negotiate a license within the specified time frame or under terms that are acceptable to us, and the institution may license such intellectual property rights to third parties, potentially blocking our ability to pursue our development and commercialization plans.

In addition, companies that perceive us to be a competitor may be unwilling to assign or license to us intellectual property rights that we require in order to successfully develop and commercialize potential products. We also may be unable to obtain such a license or assignment on terms that would allow us to make an appropriate return on our investment. In either event, our business and prospects for growth could suffer.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected. We may not be able to protect our rights to our trademarks and trade names, which we need to build name recognition among potential collaborators or customers in our markets of interest. At times, competitors may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our unregistered trademarks or trade names. Over the long term, if we are unable to successfully register our trademarks and trade names and establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. Our efforts to enforce or protect our proprietary rights related to trademarks, trade secrets, domain names, copyrights and other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely impact our financial condition or results of operations.

Risks Related to Owning Our Common Stock

We could be subject to securities class action litigation.

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant to us as a biopharmaceutical company, as our stock price can significantly fluctuate as a result of public announcements regarding the progress of our development efforts for our discovery platform and our product

candidates. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

We do not currently intend to pay dividends on our common stock.

We do not intend to pay any dividends to holders of our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. In addition, pursuant to the terms of our Revolving Line we are prohibited from paying cash dividends without the prior written consent of PWB and future debt instruments may materially restrict our ability to pay dividends on our common stock. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future, and the success of an investment in our common stock will depend upon any future appreciation in its value. Consequently, you may need to sell all or part of your common stock after price appreciation, which may never occur, as the only way to realize any future gains on your investment.

Provisions in our amended and restated certificate of incorporation and restated bylaws or Delaware law might discourage, delay or prevent a change in control of our company or changes in our management and therefore depress the trading price of our common stock.

Provisions in our amended and restated certificate of incorporation and our restated bylaws may discourage, delay or prevent a merger, acquisition or other change in control of our company that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions include those establishing:

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from filling vacancies on our board of directors;
- the ability of our board of directors to authorize the issuance of shares of preferred stock and to determine the terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- the ability of our board of directors to alter our bylaws without obtaining stockholder approval;
- the required approval of the holders of at least two-thirds of the shares entitled to vote at an election of directors to adopt, amend or repeal our bylaws or repeal the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by the chairman of the board of directors, our chief executive officer (or our president, in the absence of a chief executive officer) or a majority of our board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the General Corporation Law of the State of Delaware, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

Our amended and restated certificate of incorporation and our amended and restated bylaws include exclusive forum provisions for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum to the fullest extent permitted by law, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim for breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim arising pursuant to any provision of the General Corporation Law of the State of Delaware, our amended and restated certificate of incorporation or our amended and restated bylaws, or (4) any action asserting a claim governed by the internal affairs doctrine. Under our amended and restated certificate of incorporation, this exclusive forum provision will not apply to claims which are vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery of the State of Delaware, or for which the Court of Chancery of the State of Delaware does not have subject matter jurisdiction. For instance, the provision would not apply to actions arising under federal securities laws, including suits brought to enforce any liability or duty created by the Exchange Act or the rules and regulations thereunder. Further, our amended and restated bylaws provide that, unless we consent in writing to the selection of an alternative forum, to the fullest extent permitted by law, the federal district courts of the United States will be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act and that any person or entity purchasing or otherwise acquiring or holding any interest in shares of our capital stock are deemed to have notice of and consented to this provision. These exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. For example, stockholders who do bring a claim in the Court of Chancery could face additional litigation costs in pursuing any such claim, particularly if they do not reside in or near the State of Delaware. The Court of Chancery may also reach different judgments or results than would other courts, including courts where a stockholder considering an action may be located or would otherwise choose to bring the action, and such judgments or results may be more favorable to us than to our stockholders.

We are an "emerging growth company" and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act. We will remain an emerging growth company until the earlier of (1) December 31, 2024, (2) the last day of the fiscal year in which we have total annual gross revenue of $1.235 billion or more, (3) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years, or (4) the date on which we are deemed to be a large accelerated filer under the rules of the SEC which means the market value of our common stock that is held by non-affiliates exceeds $700 million as of the prior June 30th. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include:

- being permitted to present only two years of "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure in this Annual Report on Form 10-K;
- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended;
- not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements;
- reduced disclosure obligations in our SEC filings regarding executive compensation; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of these accounting standards until they would otherwise apply to private companies. We have elected to take advantage of this extended transition period.

We may choose to take advantage of some, but not all, of the available exemptions for emerging growth companies. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be reduced or more volatile.

Additionally, we are a "smaller reporting company" as defined in Regulation S-K. Even after we no longer qualify as an emerging growth company, we may still qualify as a "smaller reporting company," which would allow us to continue to take advantage of many of the same exemptions from disclosure requirements, including presenting only the two most recent fiscal years of audited financial statements and reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. We may continue to be a smaller reporting company if either (i) the market value of our stock held by non-affiliates is less than $250 million or (ii) our annual revenue is less than $100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than $700 million. To the extent we take advantage of such reduced disclosure obligations, it may also make comparison of our financial statements with other public companies difficult or impossible.

General Risk Factors

We or third parties with whom we have relationships may be adversely affected by natural or manmade disasters, public health emergencies and other natural catastrophic events, and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Natural or manmade disasters could severely disrupt our operations and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, public health emergency, power outage or other event occurred that prevented us from using all or a significant portion of our facilities, that damaged our infrastructure or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time, and our research and development activities could be setback or delayed. The disaster recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business, and such an event could disrupt our operations, cause us to incur remediation costs, damage our reputation and cause a loss of confidence in us and our or third parties' ability to conduct clinical trials, which could adversely affect our reputation and delay our research and development programs.

Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.

Global credit and financial markets have experienced extreme volatility and disruptions in the recent past, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates, exchange rate impacts and uncertainty about economic stability, and similar deterioration in the credit and financial markets and confidence in economic conditions may occur in the future. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or unpredictable and unstable market conditions. If the current equity and credit markets deteriorate, or do not improve, it may make any necessary debt or equity financing more difficult, more costly and more dilutive. If we are unable to obtain sufficient funding on a timely basis or on favorable terms, we may be required to significantly delay, alter reduce or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan or growth strategy, or capitalize on business opportunities as desired.

In addition, there is a risk that one or more of our current service providers, manufacturers or others with whom we have strategic relationships may not survive any difficult economic times, which could directly affect our ability to attain our operating goals.

As of December 31, 2023, we had cash and cash equivalents of $116.7 million. While we are not aware of any downgrades, material losses or other significant deterioration in the fair value of our cash equivalents since December 31, 2023, deterioration of the global credit and financial markets could negatively impact our current portfolio of cash equivalents or our ability to meet our financing objectives. In addition, we may have bank deposits at financial institutions in excess of FDIC insured limits. Market conditions can impact the viability of these institutions and, in the event of failure of the financial institution where we maintain our cash and cash equivalents, if the treatment of our cash sweep accounts were called into question in a bank receivership or if there is continued turmoil in the banking industry generally, we may not be able to access uninsured funds in a timely manner or at all, which would

adversely impact our business, financial condition and results of operations. Furthermore, our stock price may decline due in part to the volatility of the stock market and any general economic downturn.

The market price of our common stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our common stock.

The market price of our common stock is likely to be highly volatile and may fluctuate substantially due to many factors, including:

- inconsistent trading volume levels of our common stock;
- announcements or expectations regarding debt or equity financing efforts;
- sales of common stock by us, our insiders or our other stockholders;
- actual or anticipated fluctuations in our financial condition and operating results;
- failure to meet or exceed financial estimates and projections of the investment community or that we provide to the public;
- results from or delays in our studies or trials, or those of our collaborators, competitors or companies perceived to be similar to us;
- delay, failure or discontinuation of any of our product development and research programs, or those of our collaborators, competitors or companies perceived to be similar to us;
- announcements about new research programs or product candidates from us or our collaborators, our competitors or companies perceived to be similar to us;
- announcements by us, our collaborators, our competitors or companies perceived to be similar to us relating to significant acquisitions, strategic partnerships or alliances, joint ventures, collaborations or capital commitments;
- actual or anticipated changes in our growth rate relative to our competitors or companies perceived to be similar to us;
- fluctuations in the valuation of our collaborators, our competitors or companies perceived to be comparable to us;
- a lack of, limited or withdrawal of coverage by security analysts, or positive or negative recommendations by them;
- actual or expected changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- publication of research reports about us, genome editing or the biopharmaceutical industries;
- developments or changing views regarding the use of genomic products, including those that involve genome editing;
- our ability to effectively manage our growth;
- the recruitment or departure of key personnel;
- the results of any efforts by us to identify, develop, acquire or in-license additional product candidates, products or technologies;
- unanticipated serious safety concerns related to the use of any of our product candidates, or those of our competitors or companies perceived to be similar to us;
- the termination of a collaboration agreement, licensing agreement or other strategic arrangement or the inability to establish additional strategic arrangements on favorable terms, or at all;

- regulatory actions with respect to any of our product candidates, or those of our competitors or companies perceived to be similar to us;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- regulatory or legal developments in the United States and other countries;
- changes in physician, hospital, or healthcare provider practices that may make our or our collaborators' products less useful;
- changes in the structure of healthcare payment systems;
- significant lawsuits, such as products liability, patent or stockholder litigation;
- short sales of our common stock; and
- general economic, industry and market conditions.

These and other market and industry factors may cause the market price and demand for our common stock to fluctuate substantially, regardless of our actual operating performance. These factors may have a material adverse effect on the market price and liquidity of our common stock, which may limit or prevent you from readily selling your shares of common stock and may affect our ability to obtain financing or enter into desired strategic relationships.

Our failure to meet the continued listing requirements of The Nasdaq Capital Market could result in a delisting of our common stock.

As previously disclosed, on April 24, 2023, we received a letter from Nasdaq (the "Nasdaq Notice") indicating that we were not in compliance with Nasdaq Listing Rule 5450(a)(1) because the closing bid price per share for our common stock was below $1.00 for the previous 30 consecutive business days (the "Minimum Bid Price Requirement"). The Nasdaq Notice provided an initial period of 180 calendar days in which to regain compliance with the Minimum Bid Price Requirement by achieving a minimum bid price per share of our common stock of at least $1.00 for at least ten consecutive business days.

On October 24, 2023, we received approval from the Listing Qualifications Department of Nasdaq to transfer the listing of our common stock from The Nasdaq Global Select Market to The Nasdaq Capital Market (the "Approval"). Our common stock was transferred to The Nasdaq Capital Market effective as of the open of business on October 26, 2023, and continues to trade under the symbol "DTIL." The Nasdaq Capital Market operates in substantially the same manner as The Nasdaq Global Select Market, and listed companies must meet certain financial requirements and comply with Nasdaq's corporate governance requirements. As a result of the Approval and transfer to The Nasdaq Capital Market, we were granted an additional 180-day grace period, or until April 22, 2024, to regain compliance with the Minimum Bid Price Requirement.

On January 18, 2024, our stockholders approved a proposal to amend our amended and restated certificate of incorporation to effect a reverse stock split of our common stock at a ratio of not less than 1-for-10 and not more than 1-for-30, with such ratio and the implementation and timing of such reverse stock split to be determined by our board of directors in its sole discretion. On February 6, 2024, our board of directors approved a 1-for-30 reverse stock split of our issued and outstanding common stock, and on February 13, 2024, we filed with the Secretary of State of the State of Delaware a certificate of amendment to our amended and restated certificate of incorporation in order to effect the reverse stock split. As a result of the reverse stock split, every 30 shares of our common stock issued or outstanding were automatically reclassified into one new share of common stock, and the number of our issued and outstanding shares of common stock was reduced to 4,191,053 and 4,164,038, respectively. Trading of our common stock on The Nasdaq Capital Market commenced on a split-adjusted basis on February 14, 2024. The primary goal of the reverse stock split was to increase the per share market price of our common stock to meet the Minimum Bid Price Requirement. All references to numbers of shares of common stock and per-share information in this Annual Report on Form 10-K have been adjusted retroactively, as appropriate, to reflect the reverse stock split.

On March 1, 2024, we were notified by Nasdaq Listing Qualifications that the closing bid price of our common stock had been $1.00 per share or greater for 10 consecutive business days, from February 14, 2024 to February 29, 2024. Accordingly, we have regained compliance with the Minimum Bid Price Requirement. Although we regained compliance with the Minimum Bid Price Requirement, there can be no guarantee that we can continue to remain compliant or that we will be able to maintain compliance with the other Nasdaq listing standards.

Delisting our common stock may make it more difficult for us to raise capital on favorable terms in the future and would likely have a negative effect on the price of our common stock and would impair our stockholders' ability to sell or purchase our common stock. In the event of a delisting, we can provide no assurance that any action taken by us to restore compliance with listing requirements would allow our common stock to become listed again, stabilize the market price or improve the liquidity of our common stock, prevent our common stock from dropping below the Minimum Bid Price Requirement or prevent future non-compliance with Nasdaq's listing requirements. If for any reason our common stock does not maintain eligibility for listing on Nasdaq, we may list our common stock elsewhere, such as one of the over-the-counter markets, which are generally considered less liquid and more volatile than a national securities exchange, and could mean that certain institutional investors could no longer hold or purchase our stock, and as a result, a purchaser of our common stock may find it more difficult to dispose of, or to obtain accurate quotations as to the price of their shares. This could materially and adversely affect the liquidity of our common stock.

If securities or industry analysts issue an adverse or misleading opinion regarding our common stock, our stock price and trading volume could decline.

The trading market for our common stock relies in part on the research and reports that industry or securities analysts publish about us or our business. We do not control these analysts. If any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our stock performance, or if our preclinical studies and operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts ceases coverage of us or fails 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.

Item 1B. Unresolved Staff Comments.

None.

Item 1C. Cybersecurity.

Cybersecurity Risk Management and Strategy

We have developed and implemented a cybersecurity risk management program intended to protect the confidentiality, integrity, and availability of our critical systems and information. Our cybersecurity risk management program includes a cybersecurity incident response plan.

We designed and assess our program based on the National Institute of Standards and Technology Cybersecurity Framework ("NIST CSF"). This does not imply that we meet any particular technical standards, specifications, or requirements, only that we use the NIST CSF as a guide to help us identify, assess, and manage cybersecurity risks relevant to our business.

We are utilizing our cybersecurity risk management program as the basis for developing our overall enterprise risk management program, and our current cybersecurity risk management program involves a range of policies, procedures, and controls designed to safeguard our information assets. Key elements of our cybersecurity risk management program include:

- risk assessments designed to help identify material cybersecurity risks to our critical systems, information, products, services, and our broader enterprise information technology environment;
- a security team principally responsible for managing (1) our cybersecurity risk assessment processes, (2) our security controls, and (3) our response to cybersecurity incidents;
- the use of external service providers, where appropriate, to assess, test, or otherwise assist with aspects of our security controls;
- cybersecurity awareness training for our employees, incident response personnel, and senior management;
- a cybersecurity incident response plan that includes procedures for responding to cybersecurity incidents; and
- a third-party risk management process for service providers, suppliers, and vendors that have access to our critical systems and information.

We have not identified risks from known cybersecurity threats, including as a result of any prior cybersecurity incidents, that have materially affected or are reasonably likely to materially affect us, including our operations, business strategy, results of operations, or financial condition. In addition, we have secured cyber insurance coverage, and we plan to regularly review our coverage to align with the evolving nature of cyber threats and industry standards. For more information, see the section titled "*Risk Factors— Our business and operations may suffer in the event of information technology system failures, cyberattacks or deficiencies in our security, which could materially affect our results*." in Part I, Item 1A. of this Annual Report on Form 10-K.

Cybersecurity Governance

Our board of directors considers cybersecurity risk part of its risk oversight function and has delegated to the audit committee of our board of directors (the "Audit Committee") oversight of cybersecurity and other information technology risks. The Audit Committee oversees management's implementation of our cybersecurity risk management program. The Audit Committee receives quarterly reports from the Vice President of Operation & Information Technology, and Head of Information Technology on our cybersecurity risks.

Our management team, including our Vice President of Operations & Information Technology and Head of Information Technology, has 18+ years of experience in enterprise risk management, governance, and technical operations, information technology enterprise architecture, and information technology management, and oversees our information security program. In addition, management regularly updates the Audit Committee with respect to cybersecurity risk, also on an ad hoc basis as necessary, regarding any material cybersecurity incidents and any incidents with lesser impact potential. The Audit Committee reports to the full board of directors regarding its activities, including those related to cybersecurity.

Item 2. Properties.

We currently occupy approximately 71,305 square feet, with 11,890 square feet subleased, of office and laboratory space at our corporate headquarters in Durham, North Carolina under a lease that expires in 2029.

Item 3. Legal Proceedings.

From time to time we may be involved in claims and proceedings arising in the course of our business. The outcome of any such claims or proceedings, regardless of the merits, is inherently uncertain. We are not currently party to any material legal proceedings.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

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

Our common stock trades on The Nasdaq Capital Market under the symbol "DTIL."

Holders of Common Stock

As of March 21, 2024, there were approximately 25 holders of record of our common stock. This number does not include "street name" or beneficial holders, whose shares are held of record by banks, brokers, financial institutions and other nominees.

Dividend Policy

We intend to retain future earnings, if any, to finance the operation and expansion of our business and do not anticipate paying any cash dividends in the foreseeable future. In addition, pursuant to the terms of our Revolving Line, we are prohibited from paying cash dividends without the prior written consent of PWB and future debt instruments may materially restrict our ability to pay dividends on our common stock. Any future determination related to our dividend policy will be made at the discretion of our board of directors after considering our financial condition, results of operations, capital requirements, business prospects and other factors our board of directors deems relevant, and subject to any restrictions applicable to us contained in any future financing instruments.

Item 6. [Reserved]

Item 7. Management's 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 Financial Statements and the related notes to those statements included elsewhere in this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report on Form 10-K, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. As a result of many important factors, including those set forth in Part I. Item 1A. "Risk Factors" of this Annual Report on Form 10-K, our actual results could differ materially from the results described in, or implied by, these forward-looking statements. As used in this Annual Report on Form 10-K, unless the context otherwise requires, references to "we," "us," "our," the "Company" and "Precision" refer to Precision BioSciences, Inc.

A discussion regarding our financial condition and results of operation, including liquidity and capital resources, for the year ended December 31, 2023 compared to the year ended December 31, 2022 is presented below.

Overview

We are an advanced gene editing company dedicated to improving life by developing *in vivo* therapies for genetic and infectious diseases with the application of our wholly-owned proprietary ARCUS genome editing platform. The foundation of ARCUS is a natural homing endonuclease which allows us to replicate precise gene editing as it evolved in nature for sophisticated gene edits, including gene insertion, excision, and elimination. ARCUS is also unique in its relatively small size which potentially allows delivery to a wider range of cells and tissues using viral and non-viral gene delivery methods.

Business Updates

In August 2023, we completed a strategic transaction with Imugene Limited and its wholly-owned subsidiary Imugene (USA) Inc. ("Imugene US" and, together with Imugene Limited, "Imugene") for our lead allogeneic chimeric antigen receptor ("CAR") T candidate for cancer, azercabtagene zapreleucel ("azer-cel"). In exchange for global rights to azer-cel for cancer, as well as our CAR T infrastructure and experienced cell therapy team, we received upfront consideration valued at $21 million, consisting of cash and convertible notes. We are eligible for an $8 million milestone payment upon successful completion of the Phase 1b dosing in the CAR T relapsed large B cell lymphoma ("LBCL") patient population, up to $198 million in additional milestone payments and double-digit royalties on net sales of azer-cel, as well as $145 million in milestone payments and tiered royalties for up to three additional research programs to be developed by Imugene. Imugene has assumed ongoing clinical execution for azer-cel in the LBCL population who have relapsed following CAR T treatment.

In January 2024, we entered into a license agreement with TG Cell Therapy, Inc. ("TG Subsidiary") and its parent company TG Therapeutics, Inc. ("TG Parent" and, together with TG Subsidiary, "TG Therapeutics") for non-oncological applications of azer-cel (the "TG License Agreement"). In connection with the TG License Agreement, we received upfront, and are also entitled to receive potential near-term economics, valued in the aggregate at $17.5 million. The upfront payment was received on February 5, 2024 and is comprised of a (i) $5.25 million cash payment and (ii) $2.25 million cash payment in exchange for 97,360 shares of our common stock by TG Therapeutics at a price of $23.10 per share, a 100% premium to the 30-day volume-weighted average price ("VWAP") prior to the date of the TG License Agreement. We will also receive $2.5 million within 12 months as an equity investment in our common stock at 100% premium to the then 30-day VWAP prior to purchase. Upon the achievement of certain near-term clinical milestones, we will receive an additional $7.5 million payment in cash and the purchase of our common stock by TG Therapeutics at a 100% premium to the then current 30-day VWAP. We are eligible to receive up to $288 million in additional milestone payments based on the achievement of certain clinical, regulatory, and commercial milestones, in addition to high-single-digit to low-double-digit royalties on net sales.

In February 2024, we announced that we had granted Caribou Biosciences, Inc. ("Caribou"), a leading CRISPR genome-editing cell therapy company, a non-exclusive, worldwide license, with the right to sublicense, to one of our foundational cell therapy patent families for use with CRISPR-based therapies in the field of human therapeutics. Under the terms of the agreement, we received an upfront payment and, upon commercialization by Caribou, will receive royalties on net sales of licensed products. In addition, for each occurrence of certain strategic transactions involving Caribou, we are entitled to receive a specific tiered milestone payment.

We are now solely focused on leveraging our proprietary ARCUS genome editing platform to advance *in vivo* gene editing programs that go beyond gene knockouts in the liver and carry out more sophisticated edits such as gene insertions, gene excision, and gene elimination, unlocking a broader potential for ARCUS *in vivo* gene editing in human therapeutics.

Corporate Updates

We presented two poster presentations at the European Society of Gene & Cell Therapy ("ESGCT") congress in October 2023, *"Unique features of ARCUS nucleases enable high efficiency, targeted gene insertion in vivo"* and *"ARCUS-mediated excision of the "hot spot" region of the human dystrophin gene results in functional improvement in a mouse model of Duchenne muscular dystrophy ("DMD")."*

Our gene editing program PBGENE-HBV, for the potential treatment of chronic hepatitis B virus ("HBV"), remains a top priority, and we expect to submit an investigational new drug ("IND") application or clinical trial application ("CTA") in 2024. HBV causes inflammation and damage to the liver, leading to chronic infection and increased risk of death from liver cancer or cirrhosis. There is no cure for chronic hepatitis B and current treatments rarely result in functional cure, primarily due to persistence of viral DNA in the liver. In patients with chronic HBV, genetic material of the virus is converted within infected liver cells into covalently closed circular DNA ("cccDNA") that acts as a template to make HBV copies. HBV also inserts its DNA into the human genome of infected liver cells. This integrated HBV DNA produces the viral protein, hepatitis B surface antigen ("HBsAg"), which is secreted in the blood. Presence of HBsAg is associated with poorer outcomes and elimination of HBsAg is necessary for functional cure of chronic hepatitis B.

PBGENE-HBV is designed to inactivate cccDNA with direct cuts and edits as well as to inactivate integrated HBV DNA with the goal of long-lasting reductions in HBsAg. We believe specificity is of particular importance for developing a safe gene editing approach to eliminating HBV, as a lack of nuclease specificity can lead to unfavorable off-target results including increased integrations of HBV genomes into the human genome, as well as translocations between integrations. Preclinical data from the PBGENE-HBV program was presented in April 2023 at an oral presentation at the Global Hepatitis Summit 2023, in June 2023 at an oral presentation at the European Association for Study of the Liver Congress 2023, and in November 2023 at the American Association for the Study of Liver Diseases Annual Meeting. Data highlighted that ARCUS nucleases exhibited high levels of on-target editing and demonstrated substantial reductions of both intracellular cccDNA and secreted HBsAg with no detectable translocations in primary human hepatocytes. In February 2024, we announced that we had received pre-IND regulatory feedback from the U.S. FDA in addition to regulatory feedback from agencies outside the U.S. providing clarity and alignment on PBGENE-HBV IND/CTA-enabling preclinical plans and clinical strategy.

At our R&D Day in September 2023, we announced that we intend to pursue development of PBGENE-PMM as a potential first-in-class opportunity for treatment of m.3243 associated primary mitochondrial myopathy ("PMM"). Mitochondrial diseases are the most common hereditary metabolic disorder, affecting 1 in 4,300 people. PMM currently lacks a curative treatment and impacts approximately 50% of patients with mitochondrial disease. The high specificity and single component nature of our mitoARCUS nucleases are designed to enable specific editing of mutant mitochondrial DNA while allowing normal (wild-type) mitochondrial DNA to repopulate in the mitochondria and restore normal function. Preclinical data from the PBGENE-PMM program presented in March 2024 at a poster presentation at the Mitochondrial Medicine – Therapeutic Development Annual Conference demonstrated ARCUS' ability to efficiently eliminate mutant mitochondrial DNA without nuclear off-target editing. We expect to submit an IND and/or CTA application in 2025 with respect to PBGENE-PMM.

Also in September 2023, we received a Notice of Allowance from the U.S. Patent and Trademark Office ("USPTO") for U.S. Patent Application No. 18/161,560, titled "Engineered Meganucleases That Target Human Mitochondrial Genomes." The allowed patent includes composition of matter claims encompassing a mitochondria-targeted ARCUS nuclease ("mitoARCUS") that is designed to specifically target, cleave, and eliminate mutant mitochondrial DNA comprising an m.3243A>G mutation.

We, along with our collaboration partners, intend to continue to evaluate the ARCUS platform with regards to safety, on-target editing, gene insertion, complex gene edits, and compatibility with viral and non-viral delivery. In June 2023, we entered into an amended and restated development and license agreement (the "Prevail Agreement") with Prevail Therapeutics, Inc. ("Prevail"), a wholly-owned subsidiary of Eli Lilly and Company. Pursuant to the terms of the Prevail Agreement, we and Prevail will continue to collaborate on developing our ARCUS nucleases for the research and development of potential *in vivo* therapies for genetic disorders, including DMD and two additional gene targets. We will continue to oversee creation, selection, *in vitro* development, and optimization of ARCUS nucleases with respect to the gene targets subject to the collaboration. Prevail will oversee and fund preclinical research and IND-enabling activities, which we previously were to conduct at our expense. We believe that shifting portions of the preclinical and IND-enabling activities on the collaboration targets to Prevail will allow us to further leverage our core capabilities in nuclease generation, development, and characterization for our internal wholly-owned programs. During the September 2023 R&D Day, we highlighted preclinical data demonstrating the potential of ARCUS *in vivo* gene editing for large gene excisions and that the edited dystrophin variant was observed in multiple tissue types frequently involved in progression of DMD, including skeletal muscle, heart, and diaphragm, thereby enabling significantly improved muscle function. We also shared data for another Prevail program during the R&D Day highlighting high efficiency gene insertion in adult non-human primates ("NHPs").

In June 2022, we announced we entered into an exclusive *in vivo* gene editing research and development collaboration and license agreement (the "Novartis Agreement") with Novartis Pharma AG ("Novartis"). In connection with this partnership, we are developing

a custom ARCUS nuclease that will be designed to insert, *in vivo*, a therapeutic transgene at a "safe harbor" location in the genome as a potential one-time transformative treatment option for diseases including certain hemoglobinopathies such as sickle cell disease and beta thalassemia. Under the terms of the Novartis Agreement, we will develop an ARCUS nuclease and conduct *in vitro* characterization, with Novartis then assuming responsibility for all subsequent research, development, manufacturing and commercialization activities.

In partnership with iECURE, Inc. ("iECURE"), an ARCUS-mediated gene insertion approach is being pursued as a potential treatment option for neonatal onset ornithine transcarbamylase ("OTC") deficiency. NHP data presented by researchers from the University of Pennsylvania's Gene Therapy Program demonstrated sustained gene insertion of a therapeutic OTC transgene one-year post-dosing in newborn and infant NHPs with high efficiency. iECURE received approval from the Australian Therapeutic Goods Administration for the initiation of a first-in-human Phase 1/2 trial evaluating ECUR-506, an investigational therapy incorporating an ARCUS nuclease in development for the treatment of OTC deficiency in pediatric (or neonatal) patients. In March 2024, iECURE also received approval from the U.K. Medicines & Healthcare products Regulatory Agency for the company's CTA application to expand the Phase 1/2 OTC-HOPE study evaluating ECUR-506 into the U.K. iECURE is preparing sites and anticipates initiating the global clinical trial in the first half of 2024.

Reverse Stock Split

On January 18, 2024, our stockholders approved a proposal to amend our amended and restated certificate of incorporation to effect a reverse stock split of our common stock at a ratio of not less than 1-for-10 and not more than 1-for-30, with such ratio and the implementation and timing of such reverse stock split to be determined by our board of directors in its sole discretion. On February 6, 2024, our board of directors approved a 1-for-30 reverse stock split of our issued and outstanding common stock, and on February 13, 2024, we filed with the Secretary of State of the State of Delaware a certificate of amendment to our amended and restated certificate of incorporation in order to effect the reverse stock split. Trading of our common stock on The Nasdaq Capital Market commenced on a split-adjusted basis on February 14, 2024. As a result of the reverse stock split, every 30 shares of our common stock issued or outstanding were automatically reclassified into and became one new share of common stock, and the number of our issued and outstanding shares of common stock was reduced to 4,191,053 and 4,164,038, respectively. All references to numbers of shares of common stock and per-share information in this Annual Report on Form 10-K have been adjusted retroactively, as appropriate, to reflect the reverse stock split.

Common Stock Offering

In March 2024, we entered into an underwriting agreement relating to the issuance and sale of an aggregate of 2,500,000 shares of our common stock and warrants to purchase 2,500,000 shares of our common stock at a combined offering price of $16.00 per share. Each warrant has an exercise price per share of $20.00, is immediately exercisable and will expire on March 5, 2029. The offering was made pursuant to a registration statement on Form S-3.

License and Collaboration Transactions

TG Therapeutics

On January 7, 2024, we entered into a license agreement (the "TG License Agreement") with TG Cell Therapy, Inc. ("TG Subsidiary") and its parent company TG Therapeutics, Inc. ("TG Parent" and, together with TG Subsidiary, "TG Therapeutics"), pursuant to which we granted TG Subsidiary certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize azer-cel for autoimmune diseases and other indications outside of cancer pursuant to the terms of the TG License Agreement.

Under the TG License Agreement, we are entitled to receive an upfront cash payment of $10.0 million (the "Upfront Payment"), an additional cash payment of $7.5 million in the event that TG Therapeutics achieves a certain clinical milestone that is expected to be achieved in the near-term (the "Initial Milestone Payment"), and additional payments upon the achievement of additional specified milestones of up to $288.6 million (the "Additional Milestone Payments"). As described below, up to $10.0 million of the cash payments potentially payable us are payable in exchange for the issuance (the "Company Stock Issuances") to TG Subsidiary of shares of our common stock.

The Upfront Payment of $10.0 million is comprised of (i) a $5.25 million cash payment that was paid to us on February 5, 2024, (ii) a $2.25 million cash payment that was paid to us on February 5, 2024 payable in exchange for 97,360 shares of our common stock, based on a price per share equal to 200% of the VWAP of our common stock for the 30 trading days prior to the date of the TG License Agreement, and (iii) a deferred cash payment of $2.5 million due within 12 months following the date of the TG License Agreement, payable in exchange for such number of shares of our common stock determined based on a price per share equal to the

greater of (A) 200% of the VWAP of our common stock for the 30 trading days prior to the date of payment or (B) a minimum price of $11.1660 determined in accordance with Nasdaq Listing Rule 5635(d) (the "Minimum Price").

The Initial Milestone Payment of $7.5 million, if payable, will consist of (i) a $5.25 million cash milestone payment and (ii) a $2.25 million cash payment payable in exchange for such number of shares of our common stock determined based on a price per share equal to the greater of (A) 200% of the VWAP of our common stock for the 30 trading days prior to the achievement of such milestone or (B) the Minimum Price.

The Additional Milestone Payments become due upon the achievement of certain milestones as specified in the TG License Agreement. Included within the Additional Milestone Payments is a potential payment of $3.0 million in connection with achievement of a milestone specified in the TG License Agreement, payable in exchange for such number of shares of our common stock determined based on a price per share equal to the greater of (A) 200% of the VWAP of our common stock for the 30 trading days prior to the achievement of such milestone or (B) the Minimum Price.

Subject to the terms and conditions of the TG License Agreement, TG Therapeutics is permitted to pay up to 50% of the value of each Additional Milestone Payment (other than the Additional Milestone Payment described above that would, upon achievement, involve the issuance of $3.0 million of Shares by Precision) in freely tradable shares of common stock of TG Parent, valued based on the VWAP of the TG Parent shares of common stock on Nasdaq for the 30 trading days prior to the achievement of the applicable milestone.

If a licensed product under the TG License Agreement is approved and sold, TG Therapeutics is also required to pay us tiered royalties ranging from high-single-digit to low-double-digit percentages on net sales of the licensed product. TG Therapeutics' obligation to pay royalties to us expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of (i) the expiration of the last-to-expire valid claim in such country covering such licensed product; (ii) the expiration of any period of data, regulatory, or market exclusivity, or supplemental protection certificates (other than patents) covering the licensed product in such country; and (iii) a period of ten years following the first commercial sale of the respective licensed product in such country.

Unless earlier terminated, the TG License Agreement will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country. We may terminate the TG License Agreement if TG Therapeutics fails to initiate certain development activities with respect to the licensed product by a specified date or ceases active development of the licensed product for a specified period of time. In addition, we may terminate the TG License Agreement if TG Therapeutics or any of its affiliates or sublicensees challenges the validity of any patents controlled by us. We or TG Therapeutics may terminate the TG License Agreement (i) for material breach by the other party and a failure to cure such breach within the time period specified in the TG License Agreement or (ii) the other party's insolvency.

Sale of CAR T Platform to Imugene

On August 15, 2023 we entered into an asset purchase agreement with Imugene (the "Imugene Purchase Agreement"). Pursuant to and simultaneously with the execution of the Imugene Purchase Agreement, on August 15, 2023 (the "Closing Date"), Imugene US acquired our manufacturing infrastructure used in the development and manufacture of azer-cel, including assuming the lease to our manufacturing facility and certain contracts with respect to our manufacturing facility, and related equipment, supplies, azer-cel clinical trial inventory and other assets related to our CAR T cell therapy platform (the "Acquired Assets"). As part of the Imugene Purchase Agreement, Imugene US hired a number of the Company's employees who were associated with our historical CAR T cell therapy operations.

In consideration for the Acquired Assets, Imugene US assumed certain liabilities, paid us $8 million in cash, and issued us convertible notes pursuant to the terms and conditions set forth in a convertible note subscription deed (collectively, the "Imugene Convertible Note") in an aggregate principal amount of $13 million. The Imugene Convertible Note is non-interest bearing and matures on the first anniversary of the Closing Date (the "Maturity Date"). On the Maturity Date, the Imugene Convertible Note will be redeemed with cash, converted into ordinary shares of Imugene Limited at a conversion price based on the 10-day volume weighted average price of Imugene Limited's ordinary shares prior to the date of conversion, or partially redeemed with cash and partially converted into shares, at Imugene's discretion.

Additionally, we entered into a license agreement with Imugene (the "Imugene License Agreement") on the Closing Date, pursuant to which we granted Imugene US certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize oncological applications of our allogeneic CAR T therapy, azer-cel, and up to three additional research product candidates directed to targets that Imugene US may nominate prior to the fifth anniversary of the effective date of the Imugene License Agreement, pursuant to the terms of the Imugene License Agreement.

In addition, under the License Agreement, we are eligible to receive milestone payments of up to an aggregate of $206 million for azer-cel, inclusive of a payment of $8 million in cash and equity upon successful completion of the Phase 1b dosing in the CAR T relapsed LBCL patient population. For azer-cel, we are eligible to receive double-digit royalties on net sales. For up to three additional research programs to be developed by Imugene, we are eligible for up to $145 million in milestone payments and, if licensed products are approved and sold, tiered royalties ranging from the mid-single digit to low-double digit percentages on net sales of such licensed products. In addition, we are eligible to receive mid-single digit percentage-based fees for certain change of control transactions involving Imugene and for partnering transactions involving a licensed product. Imugene's obligation to pay royalties to us expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of certain events related to expiration of patents, regulatory exclusivity or a period of ten years following the first commercial sale of the respective licensed product.

Unless earlier terminated, the Imugene License Agreement will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country. We may terminate the entire Imugene License Agreement due to a challenge to our patents brought by Imugene and a breach by Imugene in any material respect of the Imugene License Agreement, the Imugene Purchase Agreement or any related transaction documents. We may also terminate the Imugene License Agreement with respect to azer-cel if Imugene fails to initiate certain development activities with respect to azer-cel by a specified date, if Imugene fails to expend certain amounts on the development of azer-cel or if Imugene ceases active development of azer-cel for a specified period of time. Either party may terminate the Imugene License Agreement (i) for material breach by the other party and a failure to cure such breach within the time period specified in the agreement or (ii) the other party's insolvency.

In connection with the Imugene Purchase Agreement and the Imugene License Agreement, we and Imugene have entered into other related agreements and documents, including a registration rights agreement, a transition services agreement, a sublease for laboratory space at our headquarters and a parent company guaranty from Imugene Limited.

We concluded the Imugene License Agreement represents functional intellectual property in accordance with ASC 606 given we do not expect to provide any additional services to Imugene outside of the right to use the licensed intellectual property. As of December 31, 2023 management has constrained all variable consideration related to milestone payments in the Imugene License Agreement given the level of uncertainty associated with achievement of the milestone payments. Accordingly, no revenue was recognized under the Imugene License Agreement during the year ended December 31, 2023.

Novartis Pharma AG

On June 14, 2022, we entered into the Novartis Agreement, which became effective on June 15, 2022 (the "Novartis Effective Date"), to collaborate to discover and develop *in vivo* gene editing products incorporating our custom ARCUS nucleases for the purpose of seeking to research and develop potential treatments for certain diseases (collectively referred to as licensed products). Any initial licensed products under the Novartis Agreement will be developed for the potential treatment of certain hemoglobinopathies, including sickle cell disease and beta thalassemia.

Pursuant to the terms of the Novartis Agreement, we will develop an ARCUS nuclease and conduct in vitro characterization for the licensed products, with Novartis then assuming responsibility for all subsequent development, manufacturing and commercialization activities. Novartis will receive an exclusive license for, and be required to use commercially reasonable efforts to conduct all subsequent research, development, manufacture and commercialization activities with respect to the licensed products. We will initially develop a single, custom ARCUS nuclease for a defined "safe harbor" target site for insertion of specified therapeutic payloads in the patient's genome (the "Initial Nuclease") for Novartis to further develop as a potential *in vivo* treatment option for certain hemoglobinopathies, including sickle cell disease and beta thalassemia. Pursuant to the terms of the Novartis Agreement, Novartis may elect, subject to payment of a fee to us, to replace licensed products based on the Initial Nuclease with licensed products based on a second custom ARCUS nuclease we design for gene editing of a specified human gene target associated with hemoglobinopathies (the "Replacement Nuclease"). Additionally, Novartis has the option, upon payment of a fee to us for each exercise of the option, to include licensed products utilizing the Initial Nuclease for insertion of up to three additional specified therapeutic payloads at the "safe harbor" target site, each intended to treat a particular genetic disease. The exercise period for such option ends on the earlier of (a) the fourth anniversary of the Novartis Effective Date and (b) the replacement of the Initial Nuclease with the Replacement Nuclease as described above.

In July 2022, we received a $50.0 million upfront cash payment under the Novartis Agreement. Additionally, on the Novartis Effective Date, Novartis made an equity investment in our common stock pursuant to a stock purchase agreement (the "Novartis Stock Purchase Agreement") pursuant to which, on the Novartis Effective Date, we issued and sold to Novartis 413,581 shares of our common stock (the "Novartis Shares") in a private placement transaction for an aggregate purchase price of $25.0 million, or approximately $60.30 per share. The price per share of our common stock under the Novartis Stock Purchase Agreement represented a

20% premium over the volume-weighted-average-price of our common stock over the 10 trading days preceding the execution date of the Novartis Stock Purchase Agreement.

Pursuant to the Novartis Stock Purchase Agreement, subject to certain exceptions, Novartis may not sell the Novartis Shares without our approval for a period of two years following the Novartis Effective Date. In addition, for a period of two years following the Novartis Effective Date, Novartis and its affiliates may not (a) effect or otherwise participate in, directly or indirectly, any acquisition of any of our securities or material assets, any tender offer or exchange offer, merger or other business combination or change of control involving us, any recapitalization, restructuring, liquidation, dissolution or other extraordinary transaction with respect to us, or any solicitation of proxies or consents to vote any of our securities or (b) act with any other person, or publicly disclose any intention, to do any of the foregoing. The Novartis Stock Purchase Agreement also contains customary representations, warranties, and covenants of both parties.

On the Novartis Effective Date, we and Novartis also entered into a registration rights agreement (the "Registration Rights Agreement") pursuant to which we have agreed, within the time periods specified in the Registration Rights Agreement, to register the resale of the Novartis Shares on a registration statement to be filed with the SEC. The Registration Rights Agreement contains customary indemnification provisions, and all registration rights terminate in their entirety effective on the first date on which there cease to be any Registrable Securities (as defined in the Registration Rights Agreement) outstanding.

We will also be eligible to receive milestone payments of up to an aggregate of approximately $1.4 billion as well as certain research funding. If licensed products resulting from the collaboration are approved and sold, we will also be entitled to receive tiered royalties ranging from the mid-single digit to low-double digit percentages on net sales of licensed products, subject to customary potential reductions. Novartis's obligation to pay royalties to us expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of certain events related to expiration of patents, regulatory exclusivity or a period of ten years following the first commercial sale of the licensed product.

Unless earlier terminated, the Novartis Agreement will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country. Novartis has the right to terminate the Novartis Agreement without cause by providing advance notice to us. Either party may terminate the Novartis Agreement for material breach by the other party and a failure to cure such breach within the time period specified in the Novartis Agreement. We may also terminate the Novartis Agreement in the event that Novartis brings a challenge to our patents.

During the years ended December 31, 2023 and 2022 we recognized revenue under the Novartis Agreement of $22.7 million and $9.5 million, respectively. Deferred revenue related to the Novartis Agreement amounted to $32.4 million and $54.2 million as of December 31, 2023 and December 31, 2022, respectively, of which $7.4 million and $27.9 million, respectively, was included in current liabilities within the balance sheets.

Prevail Therapeutics, Inc.

On November 19, 2020, we entered into a development and license agreement with Eli Lilly and Company ("Lilly") to collaborate to discover and develop *in vivo* gene editing products incorporating our ARCUS nucleases to utilize ARCUS for the research and development of potential *in vivo* therapies for genetic disorders. This agreement was subsequently assigned to Prevail Therapeutics, a wholly-owned subsidiary of Lilly, effective November 1, 2022 (the "Original Prevail Agreement").

On June 30, 2023, we entered into the Prevail Agreement which amended and restated the Original Prevail Agreement. Pursuant to the terms of the Prevail Agreement, we and Prevail will continue to collaborate on developing our ARCUS nucleases for the research and development of potential *in vivo* therapies for genetic disorders, including DMD, a liver-directed target, and a central nervous system directed target. Prevail also continues to have the right to nominate up to three additional gene targets for genetic disorders over the initial nomination period of four years. Prevail may extend the nomination period for an additional two years from the date on which such initial nomination period ends, upon Prevail's election and payment of an extension fee. Additionally, Prevail has the option to replace up to two gene targets upon Prevail's election and payment of a replacement target fee.

Prevail will oversee and fund preclinical research and IND-enabling activities following creation, selection, in vitro development, and optimization of ARCUS nucleases with respect to the gene targets subject to the collaboration, which were previously conducted by us at our expense. Manufacturing initial clinical trial material for the first licensed product, which was previously our responsibility to conduct at Prevail's expense, will instead be Prevail's responsibility at Prevail's expense. Prevail will continue to be responsible for, and must use commercially reasonable efforts with respect to, conducting clinical development and commercialization activities for licensed products resulting from the collaboration.

In connection with the closing of the original development and license agreement with Lilly, we received an upfront cash payment of $100.0 million as well as $35.0 million from Lilly's purchase of 125,406 newly issued shares of our common stock. Under the Prevail Agreement, we will also be eligible to receive milestone payments of up to an aggregate of $390 million to $395 million per licensed product as well as nomination fees for additional targets and certain research funding. If licensed products resulting from the collaboration are approved and sold, we will also be entitled to receive tiered royalties ranging from the mid-single digit percentages to the low-teens percentages on world-wide net sales of the licensed products, subject to customary potential reductions. Prevail's obligation to pay royalties to us expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of certain events related to expiration of patents, regulatory exclusivity or a period of ten years following first commercial sale of the licensed product.

During the years ended December 31, 2023 and 2022, we recognized revenue under the Prevail Agreement of $26.0 million and $15.6 million, respectively. Deferred revenue related to the Prevail Agreement was $52.7 million and $74.8 million as of December 31, 2023 and December 31, 2022, respectively, of which $4.7 million and $18.3 million, respectively, was included in current liabilities within the balance sheets.

iECURE

In August 2021, we entered into a development and license agreement with iECURE (the "iECURE DLA") under which iECURE was to advance our PBGENE-PCSK9 candidate through preclinical activities as well as a Phase 1 clinical trial in order to gain access to a license to use our PCSK9-directed ARCUS nuclease to insert genes into the PCSK9 locus to develop treatments for four pre-specified rare genetic diseases, including OTC deficiency (the "PCSK9 License"). Simultaneously with the entry into the iECURE DLA, we and iECURE entered into an equity issuance agreement (the "iECURE Equity Agreement"), pursuant to which iECURE issued us common stock in iECURE as additional consideration for the PCSK9 license. Additionally, we are eligible to receive milestone and mid-single digit to low double digit royalty payments on sales of iECURE products developed with ARCUS.

We adjust the carrying value of the iECURE equity to fair value each reporting period with any changes in fair value recorded to other income (expense). During the year ended December 31, 2023, we recorded a $0.6 million increase in the carrying value of our iECURE equity to adjust to fair value.

The fair value of the costs to be incurred by iECURE to progress the Company's PBGENE-PCSK9 candidate through the Phase 1 clinical trial (the "PCSK9 Prepaid") were recorded to the prepaid expenses and other assets line items of the balance sheets. The PCSK9 Prepaid was amortized to research and development expense on a pro-rata basis as iECURE incurred costs to progress the PBGENE-PCSK9 candidate through the Phase 1 clinical trial. During the year ended December 31, 2022, we recognized $2.1 million of research and development expense related to amortization of the PCSK9 Prepaid. The remaining unamortized PCSK9 Prepaid was fully impaired during the year ended December 31, 2022 as we made the decision to cease pursuit of PBGENE-PCSK9 for familial hypercholesterolemia with iECURE as our partner in December 2022. Accordingly, there was no PCSK9 Prepaid balance as of December 31, 2023 or 2022.

Components of Our Results of Operations

Revenue

To date, we have not generated any revenue from product sales and do not expect to generate any revenue from product sales in the foreseeable future. We record revenue from collaboration agreements, including amounts related to upfront payments, milestone payments, fees for licenses of our intellectual property and research and development funding.

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for our research activities, including our discovery efforts and the development of our product candidates. These include the following:

- salaries, benefits and other related costs, including share-based compensation expense, for personnel engaged in research and development functions;
- expenses incurred under agreements with third parties, including third parties that conduct preclinical research and development activities on our behalf;
- costs of manufacturing drug products for use in our preclinical studies, including the costs of contract manufacturing organizations ("CMOs");
- costs of outside consultants;

- costs of laboratory supplies and acquiring, developing and manufacturing preclinical study materials;
- license payments made for intellectual property used in research and development activities; and
- facility-related expenses, which include direct depreciation costs and expenses for rent and maintenance of facilities and other operating costs if specifically identifiable to research activities.

We expense research and development costs as incurred. We track external research and development costs by product candidate beginning when it is publicly named as a development program. Internal and external costs that are not identifiable to specific development candidates are included in the platform development expenses category.

Research and development activities are central to our business model. We expect that our research and development expenses will increase over the long term and will comprise a larger percentage of our total expenses as we progress development of our product candidates.

We cannot determine with certainty the duration and costs of future clinical trials for our product candidates we may develop or if, when or to what extent we will generate revenue from the commercialization and sale of any product candidate for which we obtain marketing approval. We may never succeed in obtaining marketing approval for any product candidate. The duration, costs and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope, rate of progress, expense and results of future clinical trials of our product candidates and other research and development activities that we may conduct;
- the ability to collaborate and partner with third parties to fund any or all of our programs;
- uncertainties in clinical trial design and patient enrollment rates;
- the actual probability of success for our product candidates, including their safety and efficacy, early clinical data, competition, manufacturing capability and commercial viability;
- significant and changing government regulation and regulatory guidance;
- the timing and receipt of any marketing approvals; and
- the expense of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the FDA or another regulatory authority were to require us to conduct clinical trials beyond those that we anticipate will be required for the completion of clinical development of a product candidate, or if we experience significant delays in our clinical trials due to slower than expected patient enrollment or other reasons, we would be required to expend significant additional financial resources and time on the completion of clinical development.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries, consulting fees, recruitment-related costs and other employee-related costs, including share-based compensation, for personnel in our executive, finance, business development, operations and administrative functions. General and administrative expenses also include legal fees relating to intellectual property and corporate matters; information technology costs; insurance costs; travel expenses; and facility-related expenses, which include direct depreciation costs and expenses for rent and maintenance of facilities and other operating costs that are not specifically attributable to research activities.

Impairment Charges

Impairment charges represents our impairment of intangible assets and long-term prepaid assets. An impairment loss is assessed when future undiscounted cash flows are less than the assets' carrying value and is recognized when the carrying value of the asset exceeds fair value. An impairment charge is recognized for the amount by which the carrying amount exceeds the fair value of the asset.

Loss on Disposal of Assets

Loss on disposal of assets represents the remaining net book value of disposed assets at the time of their disposal and impairment recognized on assets held for sale.

Gain (Loss) on Changes in Fair Value

The change in fair value of represents the assessed changes in fair value of assets and liabilities carried at fair value.

Loss from Equity Method Investment

Loss from equity method investment represents our proportionate share of the net loss of our equity method investee, Elo Life Systems, Inc. ("Elo").

Interest Expense

Interest expense consists of interest payments incurred and discount amortization on debt outstanding.

Interest Income

Interest income consists of interest income earned on our cash and cash equivalents and note receivable from Elo.

Loss from Discontinued Operations

Loss from discontinued operations represents the gain on the sale of our CAR T infrastructure to Imugene and the results of operations of our historical cell therapy operations.

Results of Operations

Comparison of the Years Ended December 31, 2023 and December 31, 2022

The following table summarizes our results of operations for the years ended December 31, 2023 and December 31, 2022, together with the changes in those items in dollars:

	Years ended December 31,		
(in thousands)	**2023**	**2022**	**Change**
Revenue	$ 48,727	$ 25,098	$ 23,629
Operating expenses:			
Research and development	53,375	46,122	7,253
General and administrative	39,088	41,284	(2,196)
Total operating expenses	92,463	87,406	5,057
Loss from operations	(43,736)	(62,308)	18,572
Other income (expense), net:			
Impairment charges	—	(10,844)	10,844
Loss on disposal of assets	(461)	(30)	(431)
Gain (loss) on changes in fair value	1,145	(510)	1,655
Loss from equity method investment	(4,931)	(1,579)	(3,352)
Interest expense	(2,230)	(1,111)	(1,119)
Interest income	7,686	3,473	4,213
Total other income (expense), net	1,209	(10,601)	11,810
Loss from continuing operations	(42,527)	(72,909)	30,382
Loss from discontinued operations (including gain on disposal of $8,446 during the year ended December 31, 2023)	(18,792)	(38,728)	19,936
Net loss	$ (61,319)	$ (111,637)	$ 50,318

Revenue

Revenue for the year ended December 31, 2023 was $48.7 million, compared to $25.1 million for the year ended December 31, 2022. The increase of $23.6 million in revenue during the year ended December 31, 2023 was primarily the result of a $10.4 million increase in revenue recognized under the Prevail Agreement. On June 30, 2023, we amended the Original Prevail Agreement, which resulted in a decrease in total estimated effort required to satisfy the performance obligation under the agreement, as so amended and restated, and an increase in the transaction price.

Also contributing to the increase in revenue was an increase of $13.2 million in revenue recognized under the Novartis Agreement as 2023 was the first full year of revenue recognized under the Novartis Agreement.

Research and Development Expenses

(in thousands)	Years ended December 31, 2023	2022	Change
Direct research and development expenses by product candidate:			
PBGENE-HBV external development costs	9,261	804	8,457
PBGENE-PMM external development costs	352	—	352
Platform development and early-stage research expenses:			
Employee-related costs (other than share based compensation)	19,788	18,732	1,056
Share based compensation	3,642	5,410	(1,768)
Laboratory supplies and services	5,741	8,585	(2,844)
Outsourced research and development	4,682	3,458	1,224
CMOs and research organizations	71	45	26
Laboratory equipment and maintenance	938	1,049	(111)
Facility-related costs	2,370	2,053	317
Depreciation and amortization	4,022	4,010	12
Licensing fees	2,468	1,968	500
Other research and development costs	40	8	32
Total research and development expenses	$ 53,375	$ 46,122	$ 7,253

Research and development expenses for the year ended December 31, 2023 were $53.4 million, compared to $46.1 million for the year ended December 31, 2022. The increase of $7.3 million was primarily due to an $8.5 million increase in PBGENE-HBV external development costs related to CTA/IND-enabling studies. Also contributing to the increase was a $1.2 million increase in outsourced research and development costs primarily related to consulting fees, a $1.1 million increase in employee-related costs (other than share based compensation) as a result of increases in performance based compensation, a $0.5 million increase in licensing fees, and a $0.3 million increase in facility-related costs. Additionally, PBGENE-PMM external development costs increased by $0.4 million as we began pursuing development of PBGENE-PMM during the year ended December 31, 2023.

Partially offsetting the increases in research and development expenses was a $2.8 million decrease in laboratory supplies and services expenses primarily related to a decrease in expense related to partnered programs. Additionally share based compensation expenses decreased $1.8 million due to forfeitures.

General and Administrative Expenses

General and administrative expenses were $39.1 million for the year ended December 31, 2023 compared to $41.3 million for the year ended December 31, 2022. The decrease of $2.2 million was primarily due to a $1.5 million decrease in share-based compensation expense and a $0.7 million decrease in insurance expense driven by a market-related reduction in director and officer insurance premiums.

Impairment Charges

There were no impairment charges during the year ended December 31, 2023. Impairment charges were $10.8 million during the year ended December 31, 2022 which is comprised of the $10.8 million impairment of the iECURE PCSK9 Prepaid as we made the decision to cease pursuit of PBGENE-PCSK9 for FH with iECURE as our partner. The impairment charge represented the remaining unamortized balance of the PCSK9 Prepaid.

Loss on Disposal of Assets

Loss on disposal of assets was $0.5 million during the year ended December 31, 2023 which included the proceeds from sales of equipment less the remaining net book value at the time of the equipment's disposal and impairment losses recognized on assets held for sale. Loss on disposal of assets was less than $0.1 million for the year ended December 31, 2022 which represented the remaining net book value at the time of the equipment's disposal.

Gain (Loss) on Changes in Fair Value

Gain from changes in fair value was $1.1 million for the year ended December 31, 2023, which is primarily the result of an increase in the assessed fair value of the iECURE equity investment as iECURE has progressed towards a clinical trial for OTC deficiency. The loss from changes in fair value was $0.5 million for the year ended December 31, 2022, which primarily represents the change in fair value of the iECURE equity investment as a result of dilution from iECURE's Series A-1 equity raise during the year ended December 31, 2022.

Loss from Equity Method Investment

Loss from equity method investment was $4.9 million during the year ended December 31, 2023 and represented our proportionate share of Elo's net loss for such period. Loss from equity method investment was $1.6 million during the year ended December 31, 2022 and represented our proportionate share of Elo's net loss for such period, partially offset by a gain recorded from an increase in our proportionate share of Elo's net assets resulting from an equity issuance by Elo.

Interest Expense

Interest expense was $2.2 million for the year ended December 31, 2023 compared to $1.1 million during the year ended December 31, 2022. The $1.1 million increase in interest expense was primarily the result of a higher average balance on our debt and with higher interest rates during the year ended December 31, 2023 as compared to the year ended December 31, 2022.

Interest Income

Interest income was $7.7 million during the year ended December 31, 2023 compared to $3.5 million during the year ended December 31, 2022. The $4.2 million increase in interest income was primarily driven by higher interest rates on our cash and cash equivalents during the year ended December 31, 2023 as compared to the year ended December 31, 2022.

Loss from Discontinued Operations

Loss from discontinued operations was $18.8 million during the year ended December 31, 2023 compared to $38.7 million during the year ended December 31, 2022. The $19.9 million decrease in loss from discontinued operations was the result of the $8.4 million gain on sale of our CAR T infrastructure to Imugene and a $11.5 million decrease in cell therapy expenses during the year ended December 31, 2023 as compared to the year ended December 31, 2022.

Income Taxes

Since our inception in 2006, we have generated cumulative federal and state NOL and R&D credit carryforwards for which we have not recorded any net tax benefit due to the uncertainty around utilizing these tax attributes within their respective carryforward periods. As of December 31, 2023, we had federal and state NOL carryforwards of $195.0 million and $166.8 million respectively, which may be available to offset future taxable income. The U.S. federal NOLs carryforward indefinitely. The state NOL carryforwards begin to expire in 2027. As of December 31, 2023, we also had federal and state R&D tax credits of $17.2 million and an amount less than $0.1 million, which begin to expire in 2029 and 2030, respectively. As of December 31, 2023 we had federal Orphan Drug credits of $13.5 million which begin to expire in 2038. As of December 31, 2023, we also have federal contribution carryforwards of $0.2 million, which began to expire in 2023. We have recorded a full valuation allowance against our net deferred tax assets at each balance sheet date.

Liquidity and Capital Resources

Since our formation in 2006, we have devoted substantially all of our resources to developing ARCUS, conducting research and development activities, recruiting skilled personnel, developing manufacturing processes, establishing our intellectual property portfolio and providing general and administrative support for these operations.

We have incurred significant operating losses since our inception and have not generated any revenue from the sale of products. Our ability to generate any product revenue or product revenue sufficient to achieve profitability will depend on the successful development and eventual commercialization of one or more of our product candidates or the product candidates of our collaborators or other licensees for which we may receive milestone payments or royalties. As of December 31, 2023, we had an accumulated deficit of $489.6 million.

We expect to incur significant expenses and operating losses for the foreseeable future as we advance the development of our product candidates. We expect that our research and development and general and administrative costs will increase over the long term, including in connection with conducting preclinical studies and potential clinical trials for our product candidates, contracting with

CROs and CMOs, expanding our intellectual property portfolio and providing general and administrative support for our operations. If we obtain regulatory approval for any of our product candidates, we expect to incur significant expenses related to developing our commercialization capability to support product sales, marketing and distribution. As a result, we will need additional capital to fund our operations, which we may obtain from additional equity or debt financings, collaborations, licensing arrangements or other sources.

As of December 31, 2023, we had cash and cash equivalents of $116.7 million and available borrowings under our loan and security agreement (as amended from time to time, the "Revolving Line") with Pacific Western Bank ("PWB") of $7.5 million. Covenants on our Revolving Line require that we maintain an aggregate balance of unrestricted cash at PWB (not including amounts in certain specified accounts) equal to or greater than $10.0 million. Our sources of funding to finance our cash needs include proceeds from third parties through a combination of financings including our initial public offering ("IPO"), preferred stock and convertible note financings, underwritten offerings of our common stock, ATM offerings of our common stock as part of our shelf registration statement, upfront and milestone payments from partners, borrowings under bank facilities and funding from other strategic alliances and grants.

There are no assurances that we will be successful in obtaining an adequate level of financing as and when needed to finance our operations on terms acceptable to us or at all, particularly in light of current global macroeconomic conditions. If we are unable to obtain sufficient financing on a timely basis or on favorable terms, we may be required to significantly delay, alter reduce or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan or growth strategy, or capitalize on business opportunities as desired. Any of these events could materially adversely affect our financial condition and business prospects.

Because of the numerous risks and uncertainties associated with the development of therapeutic products, 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. Even if we are able to generate revenue from product sales, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be required to raise additional capital, potentially on terms that are unfavorable to us, or we may be unable to continue our operations at planned levels and be forced to reduce or terminate operations.

Cash Flows

Our cash and cash equivalents totaled $116.7 million and $189.6 as of December 31, 2023, and 2022, respectively.

The following table summarizes our sources and uses of cash for the periods presented:

	For the Years Ended December 31,	
(in thousands)	**2023**	**2022**
Net cash used in operating activities	$ (84,114)	$ (45,753)
Net cash provided by (used in) investing activities	5,829	(3,319)
Net cash provided by financing activities	5,387	94,985
(Decrease) increase in cash and cash equivalents	$ (72,898)	$ 45,913

We experienced a decrease in cash and cash equivalents during the year ended December 31, 2023 of $72.9 million, compared to a $45.9 million increase in cash and cash equivalents during the year ended December 31, 2022. The $118.8 million decrease in cash flows in the comparable periods was primarily due to the year over year decrease in net cash provided by financing activities and an increase in cash used in operating activities.

Cash Used in Operating Activities

Our primary use of cash is to fund operating expenses, which consist primarily of research and development and general and administrative costs. The use of cash in operating activities during the years ended December 31, 2023 and December 31, 2022 resulted from our net loss adjusted for non-cash items and changes in working capital.

Cash used in operating activities during the year ended December 31, 2023 was $84.1 million, compared to $45.8 million during the year ended December 31, 2022. The $38.3 million increase in cash used in operating activities was primarily driven by the $50.0 million upfront payment received from Novartis pursuant to the terms of the Novartis Agreement during the year ended December 31, 2022.

Cash Provided by (Used in) Investing Activities

Cash provided by investing activities relates to proceeds received from disposed assets. Cash used in investing activities primarily relates to cash expenditures to acquire leasehold additions, equipment, software and intangible assets. Net cash provided by investing activities during the year ended December 31, 2023 was $5.8 million, compared to $3.3 million net cash used in investing activities during the year ended December 31, 2022. The $9.1 million net increase in cash provided by investing activities was primarily driven by $8.0 million in proceeds received from Imugene as partial consideration for assets acquired under the Purchase Agreement and a $1.4 million decrease in cash paid to purchase property, equipment and software during the year ended December 31, 2023 compared to the year ended December 31, 2022.

Cash Provided by Financing Activities

Net cash provided by financing activities during the year ended December 31, 2023 was $5.4 million, compared to $95.0 million during the year ended December 31, 2022. The $89.6 million decrease in cash provided by financing activities during the year ended December 31, 2023 was primarily due a $44.0 million decrease in common stock issuance proceeds, $25.0 million in proceeds from the Novartis Stock Purchase Agreement in June 2022, and $20.0 million in borrowings from our revolving credit facility in May 2022.

Debt Obligations

Revolving Line

We may request advances on our Revolving Line with PWB up to an aggregate principal amount of $30.0 million. The Revolving Line maturity date is June 23, 2024 and all outstanding principal amounts are due upon maturity. We must also maintain an aggregate balance of unrestricted cash at PWB (not including amounts in certain specified accounts) equal to or greater than $10.0 million. The interest rate on Revolving Line borrowings is a variable annual rate equal to the greater of (a) 0.75% above the Prime Rate (as defined in the Revolving Line), or (b) 4.25%. As of December 31, 2023, the outstanding principal balance on the Revolving Line was $22.5 million, the stated interest rate was 9.25% and the effective interest rate was 10.3%.

Funding Requirements

We will continue to have funding requirements in connection with the continuation of our research and development efforts, potential IND and CTA submissions, potential clinical trials, and expected growth in our *in vivo* portfolios.

We believe that, as of the date of this Annual Report on Form 10-K, existing cash and cash equivalents, expected operational receipts, including near-term consideration to be received from licensees, operational efficiencies gained from divestment of our historical CAR T operations, and availability of our ATM facility will be sufficient to fund our operating expenses and capital expenditure requirements into the second half of 2026. We expect our cash runway to be sufficient to achieve first-in-human Phase 1 clinical data for our lead *in vivo* gene editing programs. We have based these estimates on assumptions that may prove to be imprecise, and we could utilize our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of pharmaceutical products, it is difficult to estimate with certainty the amount of our working capital requirements. Our future funding requirements will depend on many factors, including:

- the ability to collaborate and partner with third parties to fund any or all of our programs;
- the progress, costs and results of our additional research and preclinical development programs including our *in vivo* pipeline and our planned IND or CTA submissions and potential BLA submissions;
- the outcome, timing and cost of meeting regulatory requirements established by the FDA and other comparable foreign regulatory authorities;
- our ability to establish and maintain strategic collaborations, licensing or other agreements and the financial terms of such agreements;
- the scope, progress, results and costs of any product candidates that we may derive from ARCUS or any other product candidates we may develop alone or with collaborators;
- the extent to which we in-license or acquire rights to other products, product candidates or technologies;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and protecting our intellectual property rights and defending against any intellectual property-related claims; and

- the costs and timing of future commercialization activities, including product manufacturing, marketing, sales and distribution, for any product candidates for which we or our collaborators obtain marketing approval.

Until such time, if ever, that we can generate product revenue sufficient to achieve profitability, we expect to finance our cash needs through a combination of public or private equity or debt financings, collaboration agreements, other third-party funding, strategic alliances, licensing arrangements and marketing and/or distribution arrangements. See "*Risk Factors— We will need substantial additional funding, and if we are unable to raise a sufficient amount of capital when needed on acceptable terms, or at all, we may be forced to delay, reduce or eliminate some or all of our research programs, product development activities and commercialization efforts.*" in Part I, Item 1A. of this Annual Report on Form 10-K for a further discussion of our ability to generate and obtain adequate amounts of funding in connection with our continuing operations.

To the extent that we raise additional capital through the sale of equity or convertible debt securities, our stockholders' ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our shareholders. 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. If we raise additional funds through other third-party funding, collaboration agreements, strategic alliances, licensing arrangements or marketing and distribution arrangements, we may have to relinquish valuable rights to our technologies, future revenue streams, product development and research programs or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to significantly delay, alter reduce or eliminate one or more of our research or product development programs and/or commercialization efforts, or to grant rights to develop and market products or product candidates that we would otherwise prefer to develop and market ourselves. We may also be otherwise unable to execute our business plan, growth strategy, or capitalize on business opportunities as desired.

Common Stock Offering

In March 2024, we entered into an underwriting agreement relating to the issuance and sale of an aggregate of 2,500,000 shares of our common stock and warrants to purchase 2,500,000 shares of our common stock at a combined offering price of $16.00 per share. Each warrant has an exercise price per share of $20.00, is immediately exercisable and will expire on March 5, 2029. The offering was made pursuant to a registration statement on Form S-3. Gross proceeds from the transaction were $40.0 million before deducting underwriting discounts and commissions and offering expenses of approximately $2.9 million. In addition, we granted the underwriters a 30-day option to purchase up to an additional 375,000 shares of its common stock at $16.00 per share, less underwriting discounts and commissions. We intend to use the net proceeds of the offering to fund ongoing and planned research and development, and for working capital and other general corporate purposes.

Contractual Obligations and Commitments

In addition to the contractual obligations and commitments as described elsewhere in this Annual Report on Form 10-K with respect to leases, the Revolving Line, and intellectual property licenses, we also enter into contracts in the normal course of business with CMOs, universities, and other third parties for preclinical research studies, testing, manufacturing services, and other services and products for operating purposes. These contract are generally cancelable upon written notice.

The Company does not have any material capital expenditure commitments at December 31, 2023.

Critical Accounting Policies and Use of Estimates

Our management's discussion and analysis of financial condition and results of operations is based on our Financial Statements, which have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP"). The preparation of our Financial Statements and related disclosures requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, costs and expenses and the disclosure of contingent assets and liabilities in our Financial Statements. We base our estimates on historical experience, known trends and events and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in the notes to our Financial Statements, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our Financial Statements.

Revenue Recognition

Our revenues are generated primarily through collaborative research, license, development and commercialization agreements. The terms of these agreements generally contain multiple elements, or deliverables, which may include (i) licenses, or options to obtain licenses, to use our technology, (ii) research and development activities to be performed on behalf of the collaborative partner, and (iii) in certain cases, services in connection with the manufacturing of preclinical and clinical material. Payments we receive under these arrangements typically include one or more of the following: non-refundable, upfront license fees; option exercise fees; funding of research and/or development efforts; clinical and development, regulatory, and sales milestone payments; and royalties on future product sales. We classify payments received under these agreements as revenues within our statements of operations.

ASC 606, *Revenue from Contracts with Customers,* applies to all contracts with customers, except for contracts that are within the scope of other standards. Under ASC 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of ASC 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation.

At contract inception, once the contract is determined to be within the scope of ASC 606, we evaluate the performance obligations promised in the contract that are based on goods and services that will be transferred to the customer and determine whether those obligations are both (i) capable of being distinct and (ii) distinct in the context of the contract. Goods or services that meet these criteria are considered distinct performance obligations. If both these criteria are not met, the goods and services are combined into a single performance obligation. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied. Arrangements that include rights to additional goods or services that are exercisable at a customer's discretion are generally considered options. We assess if these options provide a material right to the customer and, if so, these options are considered performance obligations. The exercise of a material right is accounted for as a contract modification for accounting purposes.

We recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) each performance obligation is satisfied at a point in time or over time, and if over time this is based on the use of an output or input method.

Invoices issued as stipulated in contracts prior to revenue recognition are recorded as deferred revenue. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as deferred revenue within current liabilities in our balance sheets. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date are classified as noncurrent deferred revenue. Amounts recognized as revenue, but not yet invoiced are generally recognized as contract assets in the other current assets line item in our balance sheets.

Milestone Payments – If an arrangement includes development and regulatory milestone payments, we evaluate whether the milestones are considered probable of being reached and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within our control or the licensee's control, such as regulatory approvals, are generally not considered probable of being achieved until those approvals are received.

Royalties – For arrangements that include sales-based royalties, including milestone payments based on a level of sales, which are the result of a customer-vendor relationship and for which the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied or partially satisfied. To date, we have not recognized any royalty revenue resulting from any of our licensing arrangements.

Significant Financing Component – In determining the transaction price, we adjust consideration for the effects of the time value of money if the timing of payments provides us with a significant benefit of financing. We do not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the licensees and the transfer of the promised goods or services to the licensees will be one year or less. We assessed each of our revenue arrangements in order to determine whether a significant financing component exists and concluded that a significant financing component does not exist in any of our arrangements.

Collaborative Arrangements – We have entered into collaboration agreements, which are within the scope of ASC 606, to discover, develop, manufacture and commercialize product candidates. The terms of these agreements typically contain multiple promises or

obligations, which may include: (1) licenses, or options to obtain licenses, to use our technology, (2) research and development activities to be performed on behalf of the collaboration partner, and (3) in certain cases, services in connection with the manufacturing of preclinical and clinical material. Payments we receive under these arrangements typically include one or more of the following: non-refundable, upfront license fees; option exercise fees; funding of research and/or development efforts; clinical and development, regulatory, and sales milestone payments; and royalties on future product sales.

We analyze our collaboration arrangements to assess whether they are within the scope of ASC 808, *Collaborative Arrangements*, to determine whether such arrangements involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities. This assessment is performed throughout the life of the arrangement based on changes in the responsibilities of all parties in the arrangement. For collaboration arrangements within the scope of ASC 808 that contain multiple elements, we first determine which elements of the collaboration are deemed to be within the scope of ASC 808 and those that are more reflective of a vendor-customer relationship and, therefore, are within the scope of ASC 606. For elements of collaboration arrangements that are accounted for pursuant to ASC 808, an appropriate recognition method is determined and applied consistently, generally by analogy to ASC 606. For those elements of the arrangement that are accounted for pursuant to ASC 606, we apply the five-step model described above.

Revenue related to performance obligations satisfied over time could be materially impacted as a result of changes in the estimated research effort to satisfy performance obligations or changes in the transaction price related to variable consideration. For example, in in the year ended December 31, 2023, we recorded cumulative catch up adjustments that increased revenue by $7.6 million related to the Prevail Agreement and decreased revenue by $6.0 million related to the Novartis Agreement as a result of changes in total estimated effort required to satisfy performance obligations and changes in variable consideration included in the transaction price related to estimated fees to be received from partners. If we were to increase total estimated effort required to satisfy the performance obligations by 10%, it would result in cumulative catch up adjustments that decrease revenue recognition by $8.6 million in the current year and those amounts would be recognized in the future as the incremental effort is provided. Alternatively, if we were to decrease total estimated effort required to satisfy the performance obligations by 10%, it would result in cumulative catch up adjustments that increase revenue recognition by $10.5 million in the current year.

Accrued Research and Development Expenses

As part of the process of preparing our financial statements, we are required to make certain estimates and judgements in 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 pre-determined schedule or when contractual milestones are met; however, some require advance 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. Actual costs incurred could differ materially from estimates. Examples of estimated accrued research and development expenses include fees paid to the following:

- third parties in connection with performing research and development activities, conducting preclinical studies and clinical trials on our behalf;
- Vendors in connection with preclinical development activities; and
- CMOs and other vendors in connection with product manufacturing and development and distribution of preclinical supplies.

We base our expenses related to preclinical studies on our estimates of the services received and efforts expended pursuant to quotes and contracts with CROs that conduct and manage preclinical studies and CMOs that manufacture product for our research and development activities 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 expense. In accruing fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or amount of prepaid expense accordingly.

Share-Based Compensation

We measure stock options and other share-based awards granted to our employees, directors, consultants and advisors based on the fair value on the date of the grant and recognize compensation expense for those awards, net of actual forfeitures, over the requisite service period, which is generally the vesting period of the respective award.

The fair value of each stock option grant is estimated on the date of grant using the Black-Scholes option-pricing model, which uses as inputs the fair value of our common stock and assumptions we make for the expected volatility of our common stock, the expected term of the stock options, the risk-free interest rate for a period that approximates the expected term of the stock options and the our expected dividend yield. Expected volatility is estimated based on the historical volatility of our and other comparable publicly traded peer companies. The expected term of the options has been determined utilizing a weighted average value considering actual exercise history and estimated expected term based on the midpoint of final vest date and expiration date. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods approximately equal to the expected term of the award. Expected dividend yield is based on the fact that we have never paid cash dividends and does not expect to pay any cash dividends in the foreseeable future.

The fair value of each restricted stock unit is determined based on the closing market price of our common stock on the date of grant.

Recent Accounting Pronouncements

Accounting standards updates that have been issued, but are not effective until after December 31, 2023, are not expected to have a material effect on the our financial position, statements of operations or cash flows.

Emerging Growth Company Status

We are an "emerging growth company," as defined in the JOBS Act, and we may take advantage of reduced reporting requirements that are otherwise applicable to public companies. Section 107 of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies are required to comply with those standards. We have elected to take advantage of the extended transition period for complying with new or revised accounting standards. As an "emerging growth company," we are also exempted from having to provide an auditor attestation of internal control over financial reporting under Sarbanes-Oxley Act Section 404(b).

We will remain an "emerging growth company" until the earliest of (1) the last day of the fiscal year in which we have total annual gross revenues of $1.235 billion or more, (2) December 31, 2024, (3) the date on which we have issued more than $1.0 billion in nonconvertible debt during the previous three years or (4) the date on which we are deemed to be a large accelerated filer under the rules of the SEC, which means the market value of our common stock held by non-affiliates exceeds $700 million as of the prior June 30th.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risks in the ordinary course of our business. These risks primarily include interest rate sensitivities. Our interest-earning assets consist of cash and cash equivalents, which are denominated in U.S. dollars. We had cash and cash equivalents of $116.7 million, or 73% of our total assets, on December 31, 2023 and $189.6 million, or 80% of our total assets, on December 31, 2022. Interest income earned on our assets was $7.7 million and $3.5 million for the years ended December 31, 2023 and December 31, 2022, respectively. Our interest income is sensitive to changes in the general level of interest rates, primarily U.S. interest rates, however, we do not anticipate fluctuations in interest rates to have a material impact on our financial statements. A hypothetical 10% change in existing interest rates would not have had a material impact on the value of our cash and cash equivalents as of December 31, 2023.

Item 8. Financial Statements and Supplementary Data.

The financial statements required to be filed pursuant to this Item 8 are appended to this report and are incorporated herein by reference. An index of those financial statements is found in Item 15 of Part IV of this Annual Report on Form 10-K.

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

None.

Item 9A. Controls and Procedures.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating our disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition,

the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Evaluation of disclosure controls and procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated, as of the end of the period covered by this Annual Report on Form 10-K, the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2023.

Management's annual report on internal control over financial reporting

Our management, with the participation of our principal executive officer and our principal financial officer, is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our management conducted an assessment of the effectiveness of our internal control over financial reporting based on the criteria set forth in "Internal Control–Integrated Framework (2013)" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management concluded that, as of December 31, 2023, our internal control over financial reporting was effective.

Attestation Report of the Registered Public Accounting Firm

Our independent registered accounting firm will not be required to opine on the effectiveness of our internal control over financial reporting pursuant to Section 404 of Sarbanes-Oxley Act of 2002 until we are no longer a non-accelerated filer as defined in the Exchange Act.

Changes in internal control over financial reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the quarter ended December 31, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

INFORMATION ABOUT OUR DIRECTORS & EXECUTIVE OFFICERS

The following information with respect to our board of directors and executive officers is presented as of February 29, 2024:

Name	Age	Position at Precision BioSciences, Inc.	Principal Employment
Executive Officers			
Michael Amoroso	46	President, Chief Executive Officer and Director	Same
John Alexander Kelly	57	Chief Financial Officer	Same
Alan List, M.D.	69	Chief Medical Officer	Same
Dario Scimeca	48	General Counsel and Secretary	Same
Jeff Smith, Ph.D.	50	Chief Research Officer	Same
Non-Employee Directors			
Kevin Buehler	66	Chair of the Board and Director	Former Division Head of Alcon Laboratories, Inc. a division of Novartis AG
Melinda Brown	67	Director	Former Senior Vice President and Controller of Tapestry, Inc.
Stanley Frankel, M.D.	65	Director	Former Chief Medical Officer of Cytovia Therapeutics, Inc.
Geno Germano	63	Director	President, Chief Executive Officer and Director of Elucida Oncology, Inc.
Shari Lisa Piré, J.D.	59	Director	Chief Legal & Sustainability Officer at Plume Design, Inc.
Sam Wadsworth, Ph.D.	75	Director	Senior Scientific Advisor of Ultragenyx Pharmaceuticals, Inc.

Insider Trading Arrangements and Policies

We are committed to promoting high standards of ethical business conduct and compliance with applicable laws, rules and regulations. As part of this commitment, we have adopted our Insider Trading Policy governing the purchase, sale, and/or other dispositions of our securities by our directors, officers, and other employees, as well as by the Company itself, that we believe is reasonably designed to promote compliance with insider trading laws, rules and regulations, and the exchange listing standards applicable to us. A copy of our Insider Trading Policy is filed as Exhibit 19.1 to this Annual Report on Form 10-K.

The remaining information required by this item will be included in our definitive proxy statement (“2024 Proxy Statement”) to be filed with the SEC within 120 days of the end of our fiscal year covered by this Annual Report on Form 10-K and is incorporated herein by reference.

Item 11. Executive Compensation.

The information required by this item will be included in our 2024 Proxy Statement to be filed with the SEC within 120 days of the end of our fiscal year covered by this Annual Report on Form 10-K and is incorporated herein by reference.

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

The information required by this item will be included in our 2024 Proxy Statement to be filed with the SEC within 120 days of the end of our fiscal year covered by this Annual Report on Form 10-K and is incorporated herein by reference.

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

The information required by this item will be included in our 2024 Proxy Statement to be filed with the SEC within 120 days of the end of our fiscal year covered by this Annual Report on Form 10-K and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information required by this item will be included in our 2024 Proxy Statement to be filed with the SEC within 120 days of the end of our fiscal year covered by this Annual Report on Form 10-K and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a)(1) Financial Statements

The following documents are included on pages F-1 through F-32 attached hereto and are filed as part of this Annual Report on Form 10-K.

INDEX TO FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm (PCAOB ID: 34)	F-1
Balance Sheets as of December 31, 2023 and December 31, 2022	F-3
Statements of Operations for the Years Ended December 31, 2023 and December 31, 2022	F-5
Statements of Changes in Stockholders' Equity for the Years Ended December 31, 2023 and December 31, 2022	F-6
Statements of Cash Flows for the Years Ended December 31, 2023 and December 31, 2022	F-7
Notes to Financial Statements	F-8

(a)(2) Financial Statement Schedules

All financial statement schedules have been omitted because they are not applicable, not required or the information required is shown in the financial statements or the notes thereto.

(a)(3) Exhibits

The following is a list of exhibits filed, furnished or incorporated by reference as part of this Annual Report on Form 10-K.

Exhibit Index

Exhibit Number	Description	Form	File No.	Exhibit	Filing Date	Filed Herewith
2.1††	Asset Purchase Agreement, dated as of August 15, 2023, by and among Precision BioSciences, Inc., Imugene (USA) Inc. and Imugene Limited.	8-K/A	001-38841	2.1	8/21/2023	
3.1	Amended and Restated Certificate of Incorporation of Precision BioSciences, Inc.	8-K	001-38841	3.1	4/1/2019	
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Precision BioSciences, Inc.	8-K	001-38841	3.1	2/13/2024	
3.3	Amended and Restated Bylaws of Precision BioSciences, Inc.	8-K	001-38841	3.1	12/22/2023	
4.1	Specimen Common Stock Certificate.	S-1/A	333-230034	4.1	3/18/2019	
4.2	Amended and Restated Investors' Rights Agreement, dated May 25, 2018, as amended, by and among Precision BioSciences, Inc. and certain of its stockholders and the holders of the 2019 Notes,	S-1/A	333-230034	4.2	3/18/2019	
4.3	Amendment No. 2, dated February 3, 2020, to the Amended and Restated Investors' Rights Agreement, dated May 25, 2018, as amended, by and among Precision BioSciences, Inc. and certain of its stockholders and the holders of the 2019 Notes.	8-K	001-38841	10.1	2/6/2020	
4.4	Form of Indenture.	S-3	333-238857	4.3	6/1/2020	
4.5	Form of Warrant.	8-K	001-38841	4.1	3/1/2024	
4.6	Description of Registrant's Securities.					*
10.1†††	Loan and Security Agreement, dated May 15, 2019, by and among Precision BioSciences, Inc., Elo Life Systems, Inc. and Pacific Western Bank, as amended.	10-K	001-38841	10.1	3/9/2023	
10.2†††	License Agreement by and among TG Therapeutics, Inc., TG Cell Therapy, Inc. and Precision BioSciences, Inc.					*
10.3†††	License Agreement, effective as of August 15, 2023 by and between Precision BioSciences, Inc. and Imugene (USA) Inc.	8-K/A	001-38841	10.1	8/21/2023	
10.4††	Program Purchase Agreement, dated April 9, 2021, by and among Les Laboratoires Servier, Institut de Recherches Internationales Servier, and Precision BioSciences, Inc.	10-Q	001-38841	10.1	5/13/2021	
10.5†††	Amended and Restated Development and License Agreement, dated June 30, 2023, by and between Prevail Therapeutics, Inc. and Precision BioSciences, Inc.	8-K	001-38841	10.1	7/6/2023	
10.6	Stock Purchase Agreement, dated November 19, 2020, by and between Eli Lilly and Company and Precision BioSciences, Inc.	10-K	001-38841	10.6	3/18/2021	
10.7†††	Collaboration and License Agreement, dated June 14, 2022, by and between Precision BioSciences, Inc. and Novartis Pharma AG.	8-K	001-38841	10.1	6/21/2022	
10.8†††	Stock Purchase Agreement, dated June 14, 2022, by and between Precision BioSciences, Inc. and Novartis Pharma AG.	8-K	001-38841	10.2	6/21/2022	
10.9	Registration Rights Agreement, dated June 15, 2022, by and between Precision BioSciences, Inc. and Novartis Pharma AG.	8-K	001-38841	10.3	6/21/2022	
10.10†	License Agreement, dated April 17, 2006, as amended, by and between Duke University and Precision BioSciences, Inc.	S-1	333-230034	10.2	3/1/2019	
10.11†	Patent Cross-License Agreement, dated January 23, 2014, by and between Cellectis SA and Precision BioSciences, Inc.	S-1	333-230034	10.3	3/1/2019	

Exhibit Number	Description	Form	File No.	Exhibit	Filing Date	Filed Herewith
10.12	Lease Agreement, dated April 5, 2010, as amended, by and between Precision BioSciences, Inc. and Venable Tenant, LLC.					*
10.13#	2006 Stock Incentive Plan, as amended, and form of award agreements thereunder.	S-1	333-230034	10.8	3/1/2019	
10.14#	2015 Stock Incentive Plan, as amended, and form of award agreements thereunder.	S-1	333-230034	10.9	3/1/2019	
10.15#	2019 Incentive Award Plan, and forms of award agreements thereunder.	10-K	001-38841	10.14	3/18/2021	
10.16#	2019 Employee Stock Purchase Plan.	S-1/A	333-230034	10.11	3/18/2019	
10.17#	2021 Employment Inducement Incentive Award Plan and form of award agreements thereunder.	S-8	333-259369	99.3	9/7/2021	
10.18#	Amendment to the Precision BioSciences, Inc. 2021 Employment Inducement Incentive Award Plan.	S-8	333-267079	99.4	8/26/2022	
10.19#	Executive Employment Agreement, dated January 22, 2024, by and between Alex Kelly and Precision BioSciences, Inc.	8-K	001-38841	10.2	1/23/24	
10.20#	Amended and Restated Executive Employment Agreement between Precision BioSciences, Inc. and Dr. Alan List, dated November 7, 2022.	10-K	001-38841	10.23	3/9/23	
10.21#	Executive Employment Agreement, dated January 22, 2024, by and between Dario Scimeca and Precision BioSciences, Inc.	8-K	001-38841	10.3	1/23/2024	
10.22#	Executive Employment Agreement, dated January 22, 2024, by and between Jeff Smith and Precision BioSciences, Inc.	8-K	001-38841	10.4	1/23/2024	
10.24#	Form of Indemnification Agreement between Precision BioSciences, Inc. and its directors and officers.	S-1A	333-230034	10.17	3/18/2019	
10.25#	Non-Employee Director Compensation Plan (as amended).	10-Q	001-38841	10.1	5/9/2023	
10.26#	Executive Employment Agreement, dated January 22, 2024, by and between Michael Amoroso and Precision BioSciences, Inc.	8-K	001-38841	10.1	1/23/2024	
21.1	Subsidiaries of Precision BioSciences, Inc.					*
23.1	Consent of Deloitte & Touche LLP.					*
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					*
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					*
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.					**
97	Clawback policy					
101.INS	XBRL Instance Document					*

Exhibit Number	Description	Form	File No.	Exhibit	Filing Date	Filed Herewith
101.SCH	XBRL Taxonomy Extension Schema Document					*
104	Cover Page Interactive Data File (as formatted as Inline XBRL and contained in Exhibit 101)					*

* Filed herewith

** Furnished herewith

† Confidential treatment of certain provisions has been granted by the SEC pursuant to Rule 406 under the Securities Act of 1933, as amended.

†† Portions of this exhibit have been omitted pursuant to Item 601(b)(2)(ii) of Regulation S-K.

††† Portions of this exhibit have been omitted pursuant to Item 601(b)(10)(iv) of Regulation S-K.

# Denotes a management contract or compensatory plan or arrangement

Item 16. Form 10-K Summary.

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized**.**

Precision BioSciences, Inc.

Date: March 27, 2024

By: /s/ Michael Amoroso

Michael Amoroso
President, Chief Executive Officer and Director
(principal executive office and authorized signatory)

Date: March 27, 2024

By: /s/ John Alexander Kelly

John Alexander Kelly
Chief Financial Officer
(principal financial and accounting officer)

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

Name	Title	Date
/s/ Michael Amoroso **Michael Amoroso**	President, Chief Executive Officer and Director (*principal executive officer*)	March 27, 2024
/s/ John Alexander Kelly **John Alexander Kelly**	Chief Financial Officer (*principal financial and accounting officer*)	March 27, 2024
/s/ Kevin Buehler **Kevin Buehler**	Chair of the Board and Director	March 27, 2024
/s/ Melinda Brown **Melinda Brown**	Director	March 27, 2024
/s/ Stanley Frankel, M.D. **Stanley Frankel, M.D.**	Director	March 27, 2024
/s/ Geno Germano **Geno Germano**	Director	March 27, 2024
/s/ Shari Lisa Piré **Shari Lisa Piré**	Director	March 27, 2024
/s/ Sam Wadsworth, Ph.D. **Sam Wadsworth, Ph.D.**	Director	March 27, 2024

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Precision BioSciences, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Precision BioSciences, Inc. (the "Company") as of December 31, 2023 and 2022, the related statements of operations, changes in stockholders' equity, and cash flows, for each of the two years in the period ended December 31, 2023, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2023, in conformity with accounting principles generally accepted in the United States of America.

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 Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud.
The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

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.

/s/ Deloitte & Touche LLP

Raleigh, North Carolina

March 27, 2024

We have served as the Company's auditor since 2017.

PART I. FINANCIAL INFORMATION

Item 1. Financial Statements.

PRECISION BIOSCIENCES, INC.
BALANCE SHEETS
(In thousands, except share and per share amounts)

	December 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 116,678	$ 189,576
Accounts receivable	901	720
Prepaid expenses	5,977	6,025
Convertible note receivable	11,897	—
Other current assets	419	1,228
Assets held for sale	487	—
Current assets of discontinued operations	—	1,556
Total current assets	136,359	199,105
Property, equipment, and software—net	6,338	11,815
Intangible assets—net	400	731
Right-of-use assets—net	8,263	1,964
Investment in equity securities	3,206	2,576
Equity method investment	—	2,172
Note receivable—net	4,990	7,234
Other assets	225	226
Noncurrent assets of discontinued operations	—	12,346
Total assets	$ 159,781	$ 238,169
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 2,968	$ 653
Accrued compensation	4,978	5,104
Accrued research and development expenses	1,557	1,827
Deferred revenue	12,035	46,192
Lease liabilities	1,133	1,678
Loan payable—net	22,412	—
Other current liabilities	2,391	745
Current liabilities of discontinued operations	2,513	3,465
Total current liabilities	49,987	59,664
Deferred revenue	73,082	82,872
Lease liabilities	7,723	1,059
Long term debt—net	—	22,223
Other liabilities	—	201
Contract liabilities	10,000	10,000
Noncurrent liabilities of discontinued operations	128	1,717
Total liabilities	140,920	177,736
Commitments and contingencies (Note 13)		
Stockholders' equity:		
Preferred stock, $0.0001 par value— 10,000,000 shares authorized as of December 31, 2023 and December 31, 2022; no shares issued and outstanding as of December 31, 2023 and December 31, 2022	—	—
Common stock; $0.000005 par value— 200,000,000 shares authorized, 4,191,053 shares issued and 4,164,038 shares outstanding as of December 31, 2023; 3,725,689 shares issued and 3,698,674 shares outstanding as of December 31, 2022	1	1
Additional paid-in capital	509,443	489,696
Accumulated deficit	(489,631)	(428,312)
Treasury stock	(952)	(952)
Total stockholders' equity	18,861	60,433
Total liabilities and stockholders' equity	$ 159,781	$ 238,169

See notes to financial statements

PRECISION BIOSCIENCES, INC.
STATEMENTS OF OPERATIONS
(In thousands, except share and per share amounts)

	For the Years Ended December 31,	
	2023	2022
Revenue	$ 48,727	$ 25,098
Operating expenses		
Research and development	53,375	46,122
General and administrative	39,088	41,284
Total operating expenses	92,463	87,406
Operating Loss	(43,736)	(62,308)
Other income (expense), net:		
Impairment charges	—	(10,844)
Loss on disposal of assets	(461)	(30)
Gain (loss) on changes in fair value	1,145	(510)
Loss from equity method investment	(4,931)	(1,579)
Interest expense	(2,230)	(1,111)
Interest income	7,686	3,473
Total other income (expense), net	1,209	(10,601)
Loss from continuing operations	$ (42,527)	$ (72,909)
Loss from discontinued operations (including gain on disposal of $8,446 during the year ended December 31, 2023)	(18,792)	(38,728)
Net loss	$ (61,319)	$ (111,637)
Net loss per share - basic and diluted	$ (15.96)	$ (38.10)
Weighted average shares of common stock outstanding- basic and diluted	3,841,405	2,929,873

See notes to financial statements

PRECISION BIOSCIENCES, INC.
STATEMENTS OF CHANGES IN
STOCKHOLDERS' EQUITY
(In thousands, except share amounts)

	Common Stock		Additional Paid-In	Accumulated	Treasury	Total Stockholders'
	Shares	Amount	Capital	Deficit	Stock	Equity
Balance- December 31, 2021	2,057,085	—	$ 408,795	$ (316,675)	$ (952)	$ 91,168
Stock option exercises	11,186	—	392	—	—	392
Issuance of common stock under employee stock purchase plan	6,419	1	442	—	—	443
Share-based compensation expense	—	—	19,197	—	—	19,197
Restricted stock units vested	9,556	—	—	—	—	—
Issuance of common stock to collaboration partners	28,822	—	11,553	—	—	11,553
Net proceeds from issuance of common stock	1,612,621	—	49,317	—	—	49,317
Net loss	—	—	—	(111,637)	—	(111,637)
Balance- December 31, 2022	3,725,689	$ 1	$ 489,696	$ (428,312)	$ (952)	$ 60,433
Stock option exercises	3,196	—	31	—	—	31
Issuance of common stock under employee stock purchase plan	18,101	—	370	—	—	370
Share-based compensation expense	—	—	14,040	—	—	14,040
Restricted stock units vested	46,893	—	—	—	—	—
Net proceeds from issuance of common stock	397,174	—	5,306	—	—	5,306
Net loss	—	—	—	(61,319)	—	(61,319)
Balance- December 31, 2023	4,191,053	$ 1	$ 509,443	$ (489,631)	$ (952)	$ 18,861

See notes to financial statements

PRECISION BIOSCIENCES, INC.
STATEMENTS OF CASH FLOWS
(In thousands)

	For the Years Ended December 31,	
	2023	2022
Cash flows from operating activities:		
Net loss	$ (61,319)	$ (111,637)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	6,817	7,798
Share-based compensation	14,040	19,197
Loss on disposal of assets	563	106
Gain on disposal of business	(8,446)	—
Non-cash interest expense	368	295
Amortization of right-of-use assets	1,438	1,206
(Gain) Loss on changes in fair value	(1,145)	510
Loss from equity method investment	4,931	1,579
Amortization of discount on note receivable	(515)	(355)
Impairment charges	641	11,438
Changes in operating assets and liabilities:		
Prepaid expenses	1,051	(962)
Accounts receivable	(181)	(232)
Other assets and other current assets	1,752	1,431
Accounts payable	1,508	153
Other liabilities and other current liabilities	(724)	(1,816)
Deferred revenue	(43,947)	27,358
Lease liabilities	(946)	(1,822)
Contract liabilities	—	—
Net cash used in operating activities	(84,114)	(45,753)
Cash flows from investing activities:		
Proceeds from disposal of business	8,000	—
Proceeds from sale of equipment	107	—
Purchases of property, equipment and software	(1,957)	(3,319)
Purchases of intangibles assets	(321)	—
Net cash provided by (used in) investing activities	5,829	(3,319)
Cash flows from financing activities:		
Proceeds from stock option exercises	31	392
Proceeds from employee stock purchase plan	370	443
Proceeds from offering of common stock, net of issuance costs	4,986	49,345
Proceeds from offering of common stock to collaboration partners	—	25,000
Borrowings from revolving credit facility, net of issuance costs paid to lender	—	19,805
Net cash provided by financing activities	5,387	94,985
Net (decrease) increase in cash and cash equivalents	(72,898)	45,913
Cash and cash equivalents—beginning of period	189,576	143,663
Cash and cash equivalents —end of period	$ 116,678	$ 189,576
Supplemental disclosures of noncash financing and investing activities:		
Property, equipment and software additions included in accounts payable, accrued expenses and other current liabilities	$ 14	$ 103
Cash paid for interest	$ 2,018	$ 824
Unsettled at-the-market issuances of common stock included in other current assets	$ 320	$ —

See notes to financial statements

NOTE 1: DESCRIPTION OF BUSINESS AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Description of Business

Precision BioSciences, Inc. (the "Company") was incorporated on January 26, 2006 under the laws of the State of Delaware and is based in Durham, North Carolina. The Company is a gene editing company dedicated to improving life by developing *in vivo* therapies for genetic and infectious diseases with the application of the Company's wholly-owned proprietary ARCUS genome editing platform.

Since its inception, the Company has devoted substantially all of its efforts to research and development activities, recruiting skilled personnel, establishing its intellectual property portfolio and providing general and administrative support for these operations. The Company is subject to a number of risks similar to those of other companies conducting early-stage research and development of product candidates. Principal among these risks are dependence on key individuals and intellectual property, competition from other products and companies, and the technical risks associated with the successful research, development and clinical manufacturing of its product candidates. The Company's success is dependent upon its ability to continue to raise additional capital in order to fund ongoing research and development, obtain regulatory approval of its products, successfully commercialize its products, generate revenue, meet its obligations, and, ultimately, attain profitable operations.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America ("GAAP") requires management to make estimates and assumptions that affect the amounts reported in the financial statements and disclosures made in the accompanying notes to the financial statements. Actual results could differ from those estimates. Significant estimates include recording revenue for performance obligations recognized over time, determination of the fair value of share-based compensation grants, estimating services expended by third-party service providers used to recognize research and development expense and determination of the fair value of investments.

Basis of Presentation

These financial statements have been prepared in accordance with GAAP. Additionally, the accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business.

The accompanying financial statements have been recast for all periods presented to reflect the assets, liabilities and expenses related to discontinued operations (discussed below). The accompanying financial statements are generally presented in conformity with the Company's historical format.

Reverse Stock Split

On February 13, 2024, the Company amended its amended and restated certificate of incorporation in order to effect a 1-for-30 reverse stock split of its outstanding shares of capital stock (the "Reverse Stock Split"). As a result of the Reverse Stock Split, every 30 shares of the Company's common stock issued or outstanding were automatically reclassified into one new share of common stock, subject to the treatment of fractional shares as described below, without any action on the part of the holders. All historical share and per-share amounts reflected throughout the accompanying consolidated financial statements and other financial information in this Annual Report on Form 10-K have been retroactively adjusted to reflect the 2024 Reverse Stock Split as if the split occurred as of the earliest period presented. The Reverse Stock Split did not affect the number of authorized shares of common stock or the par value of the common stock. No fractional shares were issued in connection with the Reverse Stock Split. Stockholders who would otherwise have been entitled to receive fractional shares as a result of the Reverse Stock Split were entitled to a cash payment in lieu thereof at a price equal to the fraction to which the stockholder would otherwise be entitled multiplied by the closing sales price per share of the common stock (as adjusted to give effect to the Reverse Stock Split) on The Nasdaq Capital Market on February 13, 2024, the last trading day immediately preceding the effective time of the Reverse Stock Split.

Summary of Significant Accounting Policies

Cash and Cash Equivalents

As of December 31, 2023, the Company held cash equivalents which are composed of money market funds. As of December 31, 2022, the Company held cash equivalents which were composed of money market funds and repurchase agreements that were purchased through repurchase intermediary banks and collateralized by deposits in the form of government securities and obligations.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist principally of cash, cash equivalents, and notes receivable. All of the Company's cash and cash equivalents are held at financial institutions that management believes to be of high credit quality. The Company may maintain cash deposits in financial institutions in excess of government insured limits. The Company regularly invests excess cash deposits in money market funds and repurchase agreements. The Company believes that the credit risk arising from the holdings of these financial instruments is mitigated by the fact that these securities are of short duration, government backed and of high credit rating. The Company has not experienced any losses on cash and cash equivalents to date.

Revenue from Prevail and Novartis accounted for 53% and 47% of revenue during the year ended December 31, 2023, respectively. Revenue from Prevail and Novartis accounted for 62% and 38% of revenue during the year ended December 31, 2022, respectively. Prevail and Novartis accounted for 62% and 38% of deferred revenue as of December 31, 2023, respectively.

In addition, the Company currently holds a $10.0 million promissory note payable from Elo (defined below) and a $13.0 million convertible note from Imugene US (defined below), which exposes the Company to potential losses in the event of default. Counterparty credit risk is monitored through periodic reviews of financial records. As of December 31, 2023, the Company considers the risk of counterparty default to be minimal.

Property, Equipment and Software

Property, equipment and software ("PP&E") are stated at cost, net of depreciation and amortization. Depreciation and amortization are calculated using the straight-line method over the estimated useful lives of the assets ranging from three to seven years. Leasehold improvements are amortized on a straight-line basis over the shorter of the lease term or estimated useful life of the asset.

The depreciation and amortization periods for the Company's significant PP&E categories are as follows:

Laboratory equipment	5 to 7 years
Furniture and fixtures and office equipment	3 to 5 years
Leasehold improvements	Lesser of remaining lease term or useful life

Repairs and maintenance are charged to operations as incurred, and expenditures for additions and improvements that extend the useful life of the asset are capitalized.

Intangible Assets

Intangible assets primarily include in-licenses and capitalized patent costs. The Company capitalizes license fees paid to acquire access to proprietary technology if the technology is expected to have alternative future use in multiple research and development projects. The cost of licensed technology rights is amortized using the straight-line method over the estimated useful life of the technology. If the access to use the technology rights is one year or less, the cost is recorded as a prepaid expense and amortized over the period identified in the agreement. Amortization expense for licensed technology and capitalized patent costs is included in research and development expenses within the accompanying statement of operations.

Impairment Charges

Long-lived assets, such as PP&E, intangible assets, and long-term prepaid assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. An impairment loss is assessed when future undiscounted cash flows are less than the assets' carrying value and recognized when the carrying value of the asset exceeds fair value. Fair value is calculated by estimating the discounted future cash flows expected to be generated by the asset as well as other valuation techniques. An impairment charge is recognized for the amount by which the carrying amount exceeds the fair value of the asset.

Fair Value Measurements

Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities, which are required to be recorded at fair value, we consider the principal or most advantageous market in which we would transact and the market-based risk measurements or assumptions that market participants would use in pricing the asset or liability, such as risks inherent in valuation techniques, transfer restrictions and credit risk. ASC 820, *Fair Value Measurement*, establishes a fair value hierarchy for instruments measured at fair value that distinguishes between assumptions based on market data (observable inputs) and the Company's assumptions (unobservable inputs). Observable inputs are inputs that market participants would use in pricing the asset or liability based on market data obtained from our independent sources. Unobservable inputs are inputs that reflect the Company's assumptions about the inputs that market participants would use in pricing the asset or liability, and are developed based on the best information available in the circumstances. The following fair value hierarchy is used to classify assets and liabilities based on the observable inputs and unobservable inputs used to value the assets and liabilities:

- Level 1 - Observable inputs based on unadjusted quoted prices in active markets for identical assets or liabilities
- Level 2 - Inputs, other than quoted prices in active markets, that are observable either directly or indirectly
- Level 3 - Unobservable inputs for which there is little or no market date, which require the Company to develop its own assumptions

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

Investments in Equity Securities

The Company carries investments in equity securities for which it does not possess the ability to exercise significant influence or control at fair value in the balance sheets and records changes in fair value in the statements of operations as a component of other income or expense.

As of December 31, 2023 and December 31, 2022 the Company held common stock in iECURE (defined below) with a fair value of $3.2 million and $2.6 million, respectively.

Investments under the Equity Method

The Company utilizes the equity method to account for investments when it is determined that the Company possess the ability to exercise significant influence, but not control, over the operating and financial policies of the investee. The ability to exercise significant influence is presumed when the investor possesses more than 20% of the voting interests of the investee. This presumption may be overcome based on specific facts and circumstances that demonstrate that the ability to exercise significant influence is restricted.

In applying the equity method, the Company subsequently increases or decreases the carrying amount of the investment by the Company's proportionate share of the net earnings or losses and other comprehensive income of the investee. In the event that net losses of the investee reduce the carrying amount to zero, additional net losses are recorded if other investments in the investee are at-risk, even if the Company has not committed to provide financial support to the investee.

Leases

At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on the unique facts and circumstances present. Leases with a term greater than one year are recognized on the balance sheet as right-of-use assets and lease liabilities. The Company has elected not to recognize on the balance sheet leases with terms of one year or less. Lease liabilities and corresponding right-of-use assets are recorded based on the present value of lease payments over the expected remaining lease term. As the rate implicit in the Company's leases are not readily determinable, the Company utilizes its incremental borrowing rates, which are the rates incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment.

Revenue Recognition for Contracts with Customers

The Company's revenues are generated primarily through collaborative research, license, development and commercialization agreements.

ASC 606 applies to all contracts with customers, except for contracts that are within the scope of other standards. Under ASC 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of ASC 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation.

At contract inception, once the contract is determined to be within the scope of ASC 606, the Company evaluates the performance obligations promised in the contract that are based on goods and services that will be transferred to the customer and determines whether those obligations are both (i) capable of being distinct and (ii) distinct in the context of the contract. Goods or services that meet these criteria are considered distinct performance obligations. If both these criteria are not met, the goods and services are combined into a single performance obligation. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied. Arrangements that include rights to additional goods or services that are exercisable at a customer's discretion are generally considered options. The Company assesses if these options provide a material right to the customer and if so, these options are considered performance obligations. The exercise of a material right is accounted for as a contract modification for accounting purposes.

The Company recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) each performance obligation is satisfied at a point in time or over time, and if over time this is based on the use of an output or input method. For the year ended December 31, 2023, the Company recorded cumulative catch up adjustments on its contracts with partners that increased revenue recognition by $1.6 million; the cumulative catch-up adjustments resulted from a change in total estimated effort required to satisfy performance obligations and changes in variable consideration included in the transaction price related to estimated fees to be received from partners. During the year ended December 31, 2023, the Company recorded $48.7 million in revenue that was included in deferred revenue as of December 31, 2022.

Invoices issued as stipulated in contracts prior to revenue recognition are recorded as deferred revenue. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as deferred revenue within current liabilities in the accompanying balance sheets. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date are classified as noncurrent deferred revenue. Amounts recognized as revenue, but not yet invoiced are generally recognized as contract assets in the other current assets line item in the accompanying balance sheets.

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

Royalties – For arrangements that include sales-based royalties, including milestone payments based on a level of sales, which are the result of a customer-vendor relationship and for which the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation linked to some or all of the royalty has been satisfied or partially satisfied. To date, the Company has not recognized any royalty revenue resulting from any of its licensing arrangements.

Significant Financing Component – In determining the transaction price, the Company adjusts consideration for the effects of the time value of money if the timing of payments provides the Company with a significant benefit of financing. The Company does not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the licensees and the transfer of the promised goods or services to the licensees will be one year or less. The Company

assessed each of its revenue arrangements in order to determine whether a significant financing component exists and concluded that a significant financing component does not exist in any of its arrangements.

Collaborative Arrangements – The Company has entered into collaboration agreements, which are within the scope of ASC 606, to discover, develop, manufacture and commercialize product candidates. The terms of these agreements typically contain multiple promises or obligations, which may include: (1) licenses, or options to obtain licenses, to use the Company's technology, (2) research and development activities to be performed on behalf of the collaboration partner, and (3) in certain cases, services in connection with the manufacturing of preclinical and clinical material. Payments the Company receives under these arrangements typically include one or more of the following: non-refundable, upfront license fees; option exercise fees; funding of research and/or development efforts; clinical and development, regulatory, and sales milestone payments; and royalties on future product sales.

The Company analyzes its collaboration arrangements to assess whether the collaboration agreements are within the scope of ASC 808, *Collaborative Arrangements* ("ASC 808") to determine whether such arrangements involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities. This assessment is performed throughout the life of the arrangement based on changes in the responsibilities of all parties in the arrangement. For collaboration arrangements within the scope of ASC 808 that contain multiple elements, the Company first determines which elements of the collaboration are deemed to be within the scope of ASC 808 and those that are more reflective of a vendor-customer relationship and, therefore, are within the scope of ASC 606. For elements of collaboration arrangements that are accounted for pursuant to ASC 808, an appropriate recognition method is determined and applied consistently, generally by analogy to ASC 606. For those elements of the arrangement that are accounted for pursuant to ASC 606, the Company applies the five-step model described above.

For additional discussion of accounting for collaboration revenues, see Note 10, *Collaboration and License Agreements*.

Research and Development

Research and development costs are expensed as incurred. Research and development expenses are comprised of costs incurred in performing research and development activities including salaries, benefits, share-based compensation, allocations for rent and facility costs, depreciation, preclinical manufacturing expenses, costs of services provided by contract research organizations ("CROs") in connection with clinical trials and contract manufacturing organizations ("CMOs") engaged to manufacture clinical trial material, costs of licensing technology, and costs of services provided by research and development service providers. Upfront payments and milestone payments made for the licensing of technology are expensed as research and development in the period in which they are incurred if the technology is not expected to have any alternative future uses other than the specific research and development project for which it was intended. Nonrefundable advance payments for goods or services to be received in the future for use in research and development activities are recorded as prepaid expenses. The prepaid amounts are expensed as the related goods are delivered or the services are performed rather than when the payment is made.

The Company is required to estimate accrued research and development expenses resulting from its obligations under contracts with CROs, CMOs, research organizations, service providers, vendors and consultants in connection with research and development activities. The financial terms of these contracts are subject to negotiations and vary from contract to contract and may result in payment flows that do not match the periods over which materials or services are provided to the Company under such contracts. The Company's objective is to reflect the appropriate research and development expenses in its statements of operations by matching those expenses with the period in which the services and efforts are expended. There may be instances in which payments made to the Company's vendors will exceed the level of services provided and result in a prepayment of the expense. In accruing fees, the Company estimates the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from the Company's estimate, the Company adjusts the accrual or amount of prepaid expense accordingly.

Discontinued Operations

The Company determined that its decision to no longer internally develop *ex vivo* allogeneic chimeric antigen receptor ("CAR T") immunotherapies and related sale of our CAR T infrastructure to Imugene (defined below) met the criteria for classification as a discontinued operation in accordance with ASC Subtopic 205-20, *Discontinued Operations*. Accordingly, the accompanying financial statements for all periods have been updated to present the assets and liabilities associated with the development of *ex vivo* allogeneic CAR T immunotherapies separately as discontinued operations on the balance sheets and the results of all discontinued operations are reported as a separate component in the statements of operations.

For additional information related to discontinued operations, refer to Note 6, *Discontinued Operations.*

Comprehensive Loss

Comprehensive loss includes net loss as well as other changes in stockholders' equity that result from transactions and economic events other than those with stockholders. For the years ended December 31, 2023 and December 31, 2022, there was no difference between net loss and comprehensive loss in the accompanying statements of operations.

Net Loss Per Share

Basic net loss per share is computed by dividing net loss attributable to common stockholders by the weighted-average number of shares of common stock outstanding during the period. Diluted net loss per share is computed using the weighted-average number of shares of common stock outstanding during the period and, if dilutive, the weighted-average number of potential shares of common stock.

The Company's diluted net loss per share is the same as basic net loss per share for the years ended December 31, 2023 and December 31, 2022, given all potential shares of common stock are anti-dilutive as a result of the net loss.

Share-Based Compensation

The Company accounts for all share-based compensation awards, including stock options, restricted stock units and its employee stock purchase plan, at fair value. Compensation expense is recognized for the Company's share-based compensation awards, net of actual forfeitures, over the requisite service period, which is the vesting period of the respective award.

The fair value of each stock option grant is estimated on the date of grant using the Black-Scholes option-pricing model, which uses as inputs the fair value of the Company's common stock and assumptions the Company makes for the expected volatility of its common stock, the expected term of the stock options, the risk-free interest rate for a period that approximates the expected term of the stock options and the Company's expected dividend yield. Expected volatility is estimated based on the historical volatility of the Company and other comparable publicly traded peer companies. The expected term of the options has been determined utilizing a weighted average value considering actual exercise history and estimated expected term based on the midpoint of final vest date and expiration date. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods approximately equal to the expected term of the award. Expected dividend yield is based on the fact that the Company has never paid cash dividends and does not expect to pay any cash dividends in the foreseeable future.

The fair value of each restricted stock unit is determined based on the closing market price of the Company's common stock on the date of grant.

Income Taxes

Deferred tax assets and liabilities are determined based on the temporary differences between the financial statement carrying amounts and the tax basis of assets and liabilities using the enacted tax rates in effect in the years in which the differences are expected to reverse. In estimating future tax consequences, all expected future events are considered other than the enactment of changes in the tax law or rates. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes.

The Company may recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position is measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement.

The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent it believes, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not be realized, a valuation allowance is established through a charge to income tax expense. Potential for recovery of deferred tax assets is evaluated by estimating the future taxable profits expected and considering prudent and feasible tax planning strategies.

Accounting Standards Updates

Accounting standards updates issued, but not effective until after December 31, 2023, are not expected to have a material effect on the Company's financial position, statements of operations or cash flows.

NOTE 2: COLLABORATION AND LICENSE AGREEMENTS

TG Therapeutics

On January 7, 2024, the Company entered into a license agreement (the "TG License Agreement") with TG Cell Therapy, Inc. ("TG Subsidiary") and its parent company TG Therapeutics, Inc. ("TG Parent" and, together with TG Subsidiary, "TG Therapeutics"), pursuant to which the Company granted TG Subsidiary certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize the Company's allogeneic CAR T therapy azer-cel for autoimmune diseases and other indications outside of cancer (collectively referred to as licensed products).

Under the TG License Agreement, the Company is entitled to receive an upfront cash payment of $10.0 million (the "TG Upfront Payment"), an additional cash payment of $7.5 million in the event that TG Therapeutics achieves a certain clinical milestone that is expected to be achieved in the near-term (the "Initial Milestone Payment"), and additional payments upon the achievement of additional specified milestones of up to $288.6 million (the "Additional TG Milestone Payments"). As described below, up to $10.0 million of the cash payments potentially payable to the Company are payable in exchange for the issuance to TG Subsidiary by the Company of shares of the Company's common stock (the "Company Stock Issuances").

The TG Upfront Payment of $10.0 million is comprised of (i) a $5.25 million cash payment that was paid to the Company on February 5, 2024, (ii) a $2.25 million cash payment that was paid to the Company on February 4, 2024, in exchange for 97,360 shares of the Company's common stock, based on a price per share equal to 200% of the volume-weighted-average-price ("VWAP") of the Company's common stock for the 30 trading days prior to the date of the TG License Agreement, and (iii) a deferred cash payment of $2.5 million due within 12 months following the date of the TG License Agreement, payable in exchange for such number of shares of the Company's common stock determined based on a price per share equal to the greater of (A) 200% of the VWAP of the Company's common stock for the 30 trading days prior to the date of payment or (B) a minimum price of $11.1660 determined in accordance with Nasdaq Listing Rule 5635(d) (the "Minimum Price").

The Initial Milestone Payment of $7.5 million, if payable, will consist of (i) a $5.25 million cash milestone payment and (ii) a $2.25 million cash payment payable in exchange for such number of shares of the Company's common stock determined based on a price per share equal to the greater of (A) 200% of the VWAP of the Company's common stock for the 30 trading days prior to the achievement of such milestone or (B) the Minimum Price.

The Additional TG Milestone Payments become due upon the achievement of certain milestones as specified in the TG License Agreement. Included within the Additional TG Milestone Payments is a potential payment of $3.0 million in connection with achievement of a milestone specified in the TG License Agreement, payable in exchange for such number of shares of the Company's common stock determined based on a price per share equal to the greater of (A) 200% of the VWAP of the Company's common stock for the 30 trading days prior to the achievement of such milestone or (B) the Minimum Price.

Subject to the terms and conditions of the TG License Agreement, TG Therapeutics is permitted to pay up to 50% of the value of each Additional Milestone Payment (other than the Additional Milestone Payment described above that would, upon achievement, involve the issuance of $3.0 million of Shares by Precision) in freely tradable shares of common stock of TG Parent, valued based on the VWAP of the TG Parent shares of common stock on Nasdaq for the 30 trading days prior to the achievement of the applicable milestone.

If a licensed product under the TG License Agreement is approved and sold, TG Therapeutics is also required to pay the Company tiered royalties ranging from high-single-digit to low-double-digit percentages on net sales of the licensed product. TG Therapeutics' obligation to pay royalties to the Company expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of (i) the expiration of the last-to-expire valid claim in such country covering such licensed product; (ii) the expiration of any period of data, regulatory, or market exclusivity, or supplemental protection certificates (other than patents) covering the licensed product in such country; and (iii) a period of ten years following the first commercial sale of the respective licensed product in such country.

Unless earlier terminated, the TG License Agreement will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country. The Company may terminate the TG License Agreement if TG Therapeutics fails to initiate certain development activities with respect to the licensed product by a specified date or ceases active development of the licensed product for a specified period of time. In addition, the Company may terminate the TG License Agreement if TG Therapeutics or any of its affiliates or sublicensees challenges the validity of any patents controlled by the Company. Each of the Company and TG Therapeutics may terminate the TG License Agreement (i) for material breach by the other party and a failure to cure such breach within the time period specified in the TG License Agreement or (ii) the other party's insolvency.

Sale of Azer-cel CAR T Platform to Imugene

On August 15, 2023, the Company entered into an asset purchase agreement (the "Imugene Purchase Agreement") with Imugene Limited, and its wholly-owned subsidiary Imugene (USA) Inc. ("Imugene US" and together with Imugene Limited, "Imugene"). Pursuant to and simultaneously with the execution of the Imugene Purchase Agreement, on August 15, 2023 (the "Closing Date"), Imugene US acquired the Company's manufacturing infrastructure used in the development and manufacture of azer-cel, including assuming the lease to the Company's manufacturing facility and certain contracts of the Company with respect to the Company's manufacturing facility, and related equipment, supplies, azer-cel clinical trial inventory and other assets related to the Company's CAR T cell therapy platform. As part of the Imugene Purchase Agreement, Imugene US hired a number of employees of the Company who were associated with the Company's historical CAR T cell therapy operations.

In consideration for the assets acquired under the Imugene Purchase Agreement, Imugene US assumed certain liabilities of the Company, paid the Company $8 million in cash, and issued to the Company convertible notes pursuant to the terms and conditions set forth in a convertible note subscription deed (collectively, the "Imugene Convertible Note") in an aggregate principal amount of $13 million. The Imugene Convertible Note is non-interest bearing and matures on the first anniversary of the Closing Date (the "Maturity Date"). On the Maturity Date, the Imugene Convertible Note will be redeemed with cash, converted into ordinary shares of Imugene Limited at a conversion price based on the 10-day volume weighted average price of Imugene Limited's ordinary shares prior to the date of conversion, or partially redeemed with cash and partially converted into shares, at Imugene's discretion.

Additionally, the Company and Imugene US entered into a license agreement (the "Imugene License Agreement") on the Closing Date, pursuant to which the Company granted Imugene US certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize oncological applications of the Company's allogeneic CAR T therapy, azer-cel, and up to three additional research product candidates directed to targets that Imugene US may nominate prior to the fifth anniversary of the effective date of the Imugene License Agreement, pursuant to the terms of the Imugene License Agreement.

In addition, under the Imugene License Agreement, the Company is eligible to receive milestone payments of up to an aggregate of $206 million for azer-cel, inclusive of a payment of $8 million in cash and equity upon successful completion of the Phase 1b dosing in the CAR T relapsed large B cell lymphoma ("LBCL") patient population. For azer-cel, the Company is eligible to receive double-digit royalties on net sales. For up to three additional research programs to be developed by Imugene, the Company is eligible for up to $145 million in milestone payments and, if licensed products are approved and sold, tiered royalties ranging from the mid-single digit to low-double digit percentages on net sales of such licensed products. In addition, the Company is eligible to receive mid-single digit percentage-based fees for certain change of control transactions involving Imugene and for partnering transactions involving a licensed product. Imugene's obligation to pay royalties to the Company expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of certain events related to expiration of patents, regulatory exclusivity or a period of ten years following the first commercial sale of the respective licensed product.

Unless earlier terminated, the Imugene License Agreement will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country. The Company may terminate the entire Imugene License Agreement due to a challenge to its patents brought by Imugene and a breach by Imugene in any material respect of the Imugene License Agreement, the Imugene Purchase Agreement or any related transaction documents. The Company may also terminate the Imugene License Agreement with respect to azer-cel if Imugene fails to initiate certain development activities with respect to azer-cel by a specified date, if Imugene fails to expend certain amounts on the development of azer-cel or if Imugene ceases active development of azer-cel for a specified period of time. Either party may terminate the License Agreement (i) for material breach by the other party and a failure to cure such breach within the time period specified in the agreement or (ii) the other party's insolvency.

The Company assessed the Imugene License Agreement in accordance with ASC 606 and concluded that the promises in the Imugene License represent a transaction with a customer. The Company has concluded that the Imugene License Agreement contains the following promises: (i) the license to develop, manufacture, and commercialize oncological applications of the azer-cel and up to three additional research product candidates and (ii) JSC ("Joint Steering Committee") Participation. The JSC participation was determined to be an immaterial promise as the time commitment and related cost associated with performance of JSC participation is expected to be inconsequential to the total consideration in the contract. Accordingly, the Company concluded that the promise of the license is a single performance obligation.

The Company concluded the Imugene License Agreement represents functional intellectual property in accordance with ASC 606 given the Company will not be providing any additional services to Imugene outside of the right to use the licensed intellectual property. As of December 31, 2023, management has constrained all variable consideration related to milestone payments in the Imugene License given the level of uncertainty associated with achievement of the milestone payments. Accordingly, no revenue was recognized under the Imugene License Agreement during the year ended December 31, 2023.

Collaboration and License Agreement with Novartis

On June 14, 2022, the Company entered into a collaboration and license agreement (the "Novartis Agreement") with Novartis Pharma AG ("Novartis"), which became effective on June 15, 2022 (the "Novartis Effective Date"), to collaborate to discover and develop *in vivo* gene editing products incorporating our custom ARCUS nucleases for the purpose of seeking to research and develop potential treatments for certain diseases (collectively referred to as licensed products). Any initial licensed products under the Novartis Agreement will be developed for the potential treatment of certain hemoglobinopathies, including sickle cell disease and beta thalassemia.

Pursuant to the terms of the Novartis Agreement, the Company will develop an ARCUS nuclease and conduct *in vitro* characterization for the licensed products, with Novartis then assuming responsibility for all subsequent development, manufacturing and commercialization activities. Novartis will receive an exclusive license for, and be required to use commercially reasonable efforts to conduct all subsequent research, development, manufacture and commercialization activities with respect to the licensed products. The Company will initially develop a single, custom ARCUS nuclease for a defined "safe harbor" target site for insertion of specified therapeutic payloads in the patient's genome (the "Initial Nuclease") for Novartis to further develop as a potential *in vivo* treatment option for certain hemoglobinopathies, including sickle cell disease and beta thalassemia. Pursuant to the terms of the Novartis Agreement, Novartis may elect, subject to payment of a fee to the Company, to replace licensed products based on the Initial Nuclease with licensed products based on a second custom ARCUS nuclease the Company designs for gene editing of a specified human gene target associated with hemoglobinopathies (the "Replacement Nuclease"). Additionally, Novartis has the option, upon payment of a fee to the Company for each exercise of the option, to include licensed products utilizing the Initial Nuclease for insertion of up to three additional specified therapeutic payloads at the "safe harbor" target site, each intended to treat a particular genetic disease. The exercise period for such option ends on the earlier of (a) the fourth anniversary of the Novartis Effective Date and (b) the replacement of the Initial Nuclease with the Replacement Nuclease as described above.

In July 2022, the Company received a $50.0 million upfront cash payment under the Novartis Agreement. Additionally, on the Novartis Effective Date, Novartis made an equity investment in the Company's common stock pursuant to a stock purchase agreement (the "Novartis Stock Purchase Agreement") pursuant to which, on the Novartis Effective Date, the Company issued and sold to Novartis 413,581 shares of the Company's common stock (the "Novartis Shares") in a private placement transaction for an aggregate purchase price of $25.0 million, or approximately $60.30 per share. The price per share of the Company's common stock under the Novartis Stock Purchase Agreement represented a 20% premium over the volume-weighted-average-price of the Company's common stock over the 10 trading days preceding the execution date of the Novartis Stock Purchase Agreement. Management concluded that the Novartis Stock Purchase Agreement was to be combined with the Novartis Agreement for accounting purposes. Of the total $75.0 million upfront compensation, the Company applied equity accounting guidance to measure the $11.6 million recorded in equity upon the issuance of the shares, and $63.4 million was identified as transaction price allocated to the revenue arrangement.

Pursuant to the Novartis Stock Purchase Agreement, subject to certain exceptions, Novartis may not sell the Novartis Shares without the Company's approval for a period of two years following the Novartis Effective Date. In addition, for a period of two years following the Novartis Effective Date, Novartis and its affiliates may not (a) effect or otherwise participate in, directly or indirectly, any acquisition of any of our securities or material assets, any tender offer or exchange offer, merger or other business combination or change of control involving the Company, any recapitalization, restructuring, liquidation, dissolution or other extraordinary transaction with respect to the Company, or any solicitation of proxies or consents to vote any of the Company's securities or (b) act with any other person, or publicly disclose any intention, to do any of the foregoing. The Novartis Stock Purchase Agreement also contains customary representations, warranties, and covenants of both parties.

On the Novartis Effective Date, the Company and Novartis also entered into a registration rights agreement (the "Registration Rights Agreement") pursuant to which the Company has agreed, within the time periods specified in the Registration Rights Agreement, to register the resale of the Novartis Shares on a registration statement to be filed with the SEC. The Registration Rights Agreement contains customary indemnification provisions, and all registration rights terminate in their entirety effective on the first date on which there cease to be any Registrable Securities (as defined in the Registration Rights Agreement) outstanding.

The Company will also be eligible to receive milestone payments of up to an aggregate of approximately $1.4 billion as well as certain research funding. If licensed products resulting from the collaboration are approved and sold, the Company will also be entitled to receive tiered royalties ranging from the mid-single digit to low-double digit percentages on net sales of licensed products, subject to customary potential reductions. Novartis's obligation to pay royalties to us expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of certain events related to expiration of patents, regulatory exclusivity or a period of ten years following the first commercial sale of the licensed product.

Unless earlier terminated, the Novartis Agreement will remain in effect on a licensed product-by-licensed product and country-by-country basis until the expiration of a defined royalty term for each licensed product and country. Novartis has the right to terminate the Novartis Agreement without cause by providing advance notice to the Company. Either party may terminate the Novartis Agreement for material breach by the other party and a failure to cure such breach within the time period specified in the Novartis Agreement. The Company may also terminate the Novartis Agreement in the event that Novartis brings a challenge to our patents.

The Company assessed the Novartis Agreement in accordance with ASC 606 and concluded that the promises in the agreement represent transactions with a customer. The Company has determined that the promises associated with the research and development activities for each of the targets are not distinct because they are all based on the ARCUS proprietary genome editing platform. The Company has concluded that the agreement with Novartis contains the following promises: (i) license of intellectual property; (ii) performance of research and development ("R&D") services, and (iii) Joint Steering Committee ("JSC") participation. The Company determined that the license of intellectual property and R&D services were not distinct from each other, as the license and R&D services are highly interdependent upon one another. The JSC participation was determined to be an immaterial promise as the time commitment and related cost associated with performance of JSC participation is expected to be inconsequential to the total consideration in the contract. As such, the Company determined that these promises should be combined into a single performance obligation.

The Company recognizes revenue from the $50.0 million upfront cash payment, $13.4 million allocated to the transaction price from the Novartis Stock Purchase Agreement, and variable consideration on an input method in the form of research effort relative to expected research effort at the completion of the performance obligation, which is based on the actual hours of research work performed relative to expected hours of research work to be incurred in the future to satisfy the performance obligation. Management will evaluate and adjust the total expected research effort for the performance obligation on a quarterly basis based upon actual research hours incurred to date relative to research hour forecasts. The transfer of control occurs over this time period and, in management's judgment, is the best measure of progress towards satisfying the performance obligation.

During the years ended December 31, 2023 and 2022, the Company recognized revenue under the Novartis Agreement of $22.7 million and $9.5 million, respectively. Deferred revenue related to the Novartis Agreement amounted to $32.4 million and $54.2 million as of December 31, 2023 and December 31, 2022, respectively, of which $7.4 million and $27.9 million, respectively, was included in current liabilities within the balance sheets.

Development and License Agreement with Prevail

On November 19, 2020, the Company entered into a development and license agreement with Eli Lilly and Company ("Lilly") to collaborate to discover and develop *in vivo* gene editing products incorporating the Company's ARCUS nucleases to utilize ARCUS for the research and development of potential *in vivo* therapies for genetic disorders, which was subsequently assigned to Prevail Therapeutics Inc., a wholly-owned subsidiary of Eli Lilly and Company ("Prevail"), effective November 1, 2022 (the "Original Prevail Agreement").

On June 30, 2023, the Company entered into an amended and restated development and license agreement (the "Prevail Agreement") with Prevail. The Prevail Agreement amends and restates the Original Prevail Agreement. Pursuant to the terms of the Prevail Agreement, Prevail and the Company will continue to collaborate on developing the Company's ARCUS nucleases for the research and development of potential *in vivo* therapies for genetic disorders, including Duchenne muscular dystrophy, a liver-directed target, and a central nervous system directed target. Prevail also continues to have the right to nominate up to three additional gene targets for genetic disorders over the initial nomination period of four years. Prevail may extend the nomination period for an additional two years from the date on which such initial nomination period ends, upon Prevail's election and payment of an extension fee. Additionally, Prevail has the option to replace up to two gene targets upon Prevail's election and payment of a replacement target fee.

The Company will continue to oversee creation, selection, in vitro development, and optimization of ARCUS nucleases with respect to the gene targets subject to the collaboration. Prevail will oversee and fund preclinical research and IND-enabling activities which were previously to be conducted by the Company at the Company's expense. Manufacturing initial clinical trial material for the first licensed product, which was previously the Company's responsibility to conduct at Prevail's expense, will instead be Prevail's responsibility at Prevail's expense. Prevail will continue to be responsible for, and must use commercially reasonable efforts with respect to, conducting clinical development and commercialization activities for licensed products resulting from the collaboration.

In connection with the closing of the Original Prevail Agreement on January 6, 2021, the Company received an upfront cash payment of $100.0 million. Under the Prevail Agreement, the Company will also be eligible to receive milestone payments of up to an aggregate of $390 million to $395 million per licensed product, a decrease from $420 million as provided in the Original Prevail Agreement, as well as nomination fees for additional and replacement targets and certain research funding. The terms of potential nomination fees for additional targets and royalties on worldwide net sales of licensed products for which the Company may become eligible, as well as the

terms of the Company's right to elect to co-fund the clinical development of one licensed product under the Original Prevail Agreement, are not modified by the terms of the Prevail Agreement. If licensed products resulting from the collaboration are approved and sold, the Company will also be entitled to receive tiered royalties ranging from the mid-single digit percentages to the low-teens percentages on world-wide net sales of the licensed products, subject to customary potential reductions. Prevail's obligation to pay royalties to the Company expires on a country-by-country and licensed product-by-licensed product basis, upon the latest to occur of certain events related to expiration of patents, regulatory exclusivity or a period of ten years following first commercial sale of the licensed product. Simultaneously with the entry into the Original Prevail Agreement, the Company and Lilly entered into a Share Purchase Agreement (the "Lilly Share Purchase Agreement"), pursuant to which Lilly purchased 125,406 shares of the Company's common stock for a purchase price of $35.0 million. Management concluded that the Lilly Share Purchase Agreement was to be combined with the Original Prevail Agreement for accounting purposes. Of the total $135.0 million upfront compensation, the Company applied equity accounting guidance to measure the $27.7 million recorded in equity upon the issuance of the shares, and $107.3 million was identified as the transaction price allocated to the revenue arrangement.

The Company assessed this arrangement in accordance with ASC 606 and concluded that the promises in the agreement represent transactions with a customer. The Company has determined that the promises associated with the research and development activities for each of the targets are not distinct because they are all based on the ARCUS proprietary genome editing platform. The Company has concluded that the agreement with Prevail contains the following promises: (i) license of intellectual property; (ii) performance of R&D services, (iii) JSC Participation, and (iv) regulatory responsibilities. The Company determined that the license of intellectual property, R&D services, and regulatory responsibilities were not distinct from each other, as the license, R&D services, and regulatory responsibilities are highly interdependent upon one another. The JSC participation was determined to be an immaterial promise as the time commitment and related cost associated with performance of JSC participation is expected to be inconsequential to the total consideration in the contract. As such, the Company determined that these promises should be combined into a single performance obligation.

The Company recognizes revenue from the $100.0 million upfront cash payment, $7.3 million allocated to the transaction price from the Lilly Share Purchase Agreement, and variable consideration on an input method in the form of research effort relative to expected research effort at the completion of the performance obligation, which is based on the actual time of R&D activities performed relative to expected time to be incurred in the future to satisfy the performance obligation. Management evaluates and adjusts the total expected research effort for the performance obligation on a quarterly basis based upon actual research progress to date relative to research progress forecasts. The transfer of control occurs over this time period and, in management's judgment, is the best measure of progress towards satisfying the performance obligation.

During the years ended December 31, 2023 and 2022, the Company recognized revenue under the Prevail Agreement of $26.0 million and $15.6 million, respectively. Deferred revenue related to the Prevail Agreement amounted to $52.7 million and $74.8 million as of December 31, 2023 and December 31, 2022, respectively, of which $4.7 million and $18.3 million, respectively, was included in current liabilities within the balance sheets.

Development and License Agreement with iECURE

In August 2021, the Company entered into a development and license agreement with iECURE (the "iECURE DLA") under which iECURE was to advance the Company's PBGENE-PCSK9 candidate through preclinical activities as well as a Phase 1 clinical trial in order to gain access to Precision's PCSK9-directed ARCUS nuclease to develop four other pre-specified gene editing therapies for rare genetic diseases (the "PCSK9 License"), including ornithine transcarbamylase ("OTC") deficiency, Citrullinemia Type 1 ("CTLN1"), Phenylketonuria, and another program focused on liver disease. Simultaneously with the entry into the iECURE DLA, the Company and iECURE entered into an Equity Issuance Agreement (the "iECURE Equity Agreement"), pursuant to which iECURE issued the Company common stock in iECURE as additional consideration for the PCSK9 license. Management concluded that the iECURE Equity Agreement was to be combined with the iECURE DLA (together, the "iECURE Agreements") for accounting purposes. Additionally, the Company is eligible to receive milestone and mid-single digit to low double digit royalty payments on sales of iECURE products developed with ARCUS.

The Company adjusts the carrying value of the iECURE equity to fair value each reporting period with any changes in fair value recorded to other income (expense). During the year ended December 31, 2023, the Company recorded a $0.6 million increase in the carrying value of its iECURE equity to adjust to fair value as iECURE has progressed towards a clinical trial for OTC deficiency. During the year ended December 31, 2022, the Company recorded a $0.5 million decrease in the carrying value of its iECURE equity to adjust to fair value as a result of dilution from iECURE's Series A-1 equity issued in such period.

The fair value of the costs to be incurred by iECURE to progress the Company's PBGENE-PCSK9 candidate through the Phase 1 clinical trial (the "PCSK9 Prepaid") was recorded to the prepaid expenses and other assets line items of the Company's balance sheets. The PCSK9 Prepaid was amortized to research and development expense on a pro-rata basis as iECURE incurred costs to progress the

PBGENE-PCSK9 candidate through a Phase 1 clinical trial. During the year ended December 31, 2022, the Company recognized $2.1 million of research and development expense related to amortization of the PCSK9 Prepaid. The remaining unamortized PCSK9 Prepaid was fully impaired during the year ended December 31, 2022 as the Company made the decision to cease pursuit of PBGENE-PCSK9 for familial hypercholesterolemia with iECURE as its partner in December 2022. Accordingly, there was no PCSK9 Prepaid balance as of December 31, 2023 or December 31, 2022.

NOTE 3: SHARE-BASED COMPENSATION

The Company previously granted stock options under its 2015 Stock Incentive Plan (the "2015 Plan"). As of December 31, 2023 there were 36,552 stock options outstanding under the 2015 Plan and no remaining stock options available to be granted under the 2015 Plan.

On March 12, 2019, the Company's board of directors adopted, and, on March 14, 2019 the Company's stockholders approved, the Precision BioSciences, Inc. 2019 Incentive Award Plan ("2019 Plan") and the 2019 Employee Stock Purchase Plan ("2019 ESPP"), both of which became effective on March 27, 2019.

The 2019 Plan provides for the grant of incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock, restricted stock units and other share-based awards. The 2019 Plan had 211,303 stock options and 214,857 restricted stock units ("RSUs") outstanding as of December 31, 2023.

The number of shares available for issuance under the 2019 Plan initially equaled 158,333 shares of common stock. The 2019 Plan provides for an annual increase to the number of shares of common stock available for issuance on the first day of each calendar year beginning January 1, 2020 and ending on and including January 1, 2029 by an amount equal to the lesser of (i) 4% of the aggregate number of shares of common stock outstanding on the final day of the immediately preceding calendar year and (ii) such smaller number of shares of common stock as determined by the board of directors. As of December 31, 2023, the aggregate number of shares available for issuance under the 2019 Plan has been increased by 367,616 pursuant to this provision. Any shares that are subject to awards outstanding under the Company's 2006 Plan and 2015 Plan as of the effective date of the 2019 Plan that expire, lapse, or are terminated, exchanged for cash, surrendered, repurchased, or canceled without having been fully exercised or forfeited, to the extent so unused, will become available for award grants under the 2019 Plan. As of December 31, 2023, 122,630 shares were available to be issued under the 2019 Plan.

Up to 17,500 shares of the Company's common stock were initially reserved for issuance under the 2019 ESPP. The 2019 ESPP provides for an annual increase to the number of shares available for issuance on the first day of each calendar year beginning January 1, 2020 and ending on and including January 1, 2029 by an amount equal to the lesser of (i) 1% of the shares outstanding on the final day of the immediately preceding calendar year and (ii) such smaller number of shares as is determined by our board of directors. As of December 31, 2023, the aggregate number of shares available for issuance under the 2019 ESPP has been increased by 91,903 shares pursuant to this provision. The purchase price of the shares under the 2019 ESPP, in the absence of a contrary designation, will be 85% of the lower of the fair market value of our common stock on the first trading day of the offering period or on the purchase date. As of December 31, 2023, we had issued 33,080 shares under the 2019 ESPP. As of December 31, 2023, 76,323 shares were available to be issued under the 2019 ESPP. The Company recognized share-based compensation expense related to the ESPP of $0.1 million and $0.2 million during the years ended December 31, 2023 and 2022, respectively.

On August 9, 2021, the Company's board of directors approved the adoption of the Precision BioSciences, Inc. 2021 Employment Inducement Incentive Award Plan (as amended, the "Inducement Award Plan").

The Inducement Award Plan provides for the grant of non-qualified stock options, stock appreciation rights, restricted stock, RSUs and other share-based awards to newly hired employees who have not previously been an employee or member of the board, or an employee who is being rehired following a bona fide period of non-employment by the Company. No more than 300,000 shares of the Company's common stock may be issued under the Inducement Award Plan. As of December 31, 2023, 190,739 shares were available to be issued under the Inducement Award Plan. The Inducement Award Plan had 101,807 stock options and no RSUs outstanding as of December 31, 2023.

The Company recorded employee and nonemployee share-based compensation expense as follows (in thousands):

	Years Ended December 31,	
	2023	2022
Employee	$ 12,364	$ 15,921
Nonemployee	1,676	3,276
	$ 14,040	$ 19,197

Share-based compensation expense is included in the following line items in the statements of operations (in thousands):

	Years Ended December 31,	
	2023	2022
Research and development	$ 4,355	$ 7,973
General and administrative	9,685	11,224
	$ 14,040	$ 19,197

Determining the appropriate fair value model to measure the fair value of the stock option grants on the date of grant and the related assumptions requires judgment. The fair value of each stock option grant is estimated using a Black-Scholes option-pricing model on the date of grant as follows:

	Years Ended December 31,	
	2023	2022
Estimated dividend yield	0.00%	0.00%
Weighted-average expected stock price volatility	87.15%	79.66%
Weighted-average risk-free interest rate	3.89%	2.57%
Expected term of options (in years)	5.78	6.07
Weighted-average fair value per option	$ 17.41	$ 55.91

The expected volatility rates are estimated based on the actual volatility of a peer group comprising the Company and other comparable public companies over the expected term. The expected term represents the average time that stock options are expected to be outstanding. The Company does not have sufficient history of exercising stock options to estimate the expected term of employee stock options and thus utilizes a weighted value considering actual history and estimated expected term based on the midpoint of final vest date and expiration date. The risk-free rate is based on the United States Treasury yield curve at the time of grant for the expected term of the option.

The following table summarizes activity in the Company's stock option plans for the years ended December 31, 2022 and December 31, 2023 :

	Outstanding Option Shares	Weighted-Average Exercise Price
Balance as of December 31, 2021	330,386	278.33
Granted	223,670	80.71
Exercised	(11,186)	35.13
Forfeited/canceled	(85,773)	259.72
Balance as of December 31, 2022	457,097	191.07
Granted	20,443	23.61
Exercised	(3,196)	9.59
Forfeited/canceled	(124,682)	221.38
Balance as of December 31, 2023	349,662	172.13

The intrinsic value of stock options exercised was less than $0.1 million and $0.7 million during the years ended December 31, 2023 and December 31, 2022, respectively.

During the year ended December 31, 2023, the Company granted 161,161 RSUs with a grant date fair value of $5.6 million. The fair value of the RSUs will be recognized as expense over the requisite vesting period.

The following table summarizes the Company's RSU activity for the years ended December 31, 2022 and December 31, 2023:

	RSU Awards	Weighted-Average Grant Date Fair Value
Unvested RSUs as of December 31, 2021	25,668	338.76
Granted	110,842	78.73
Forfeited	(6,404)	214.04
Vested	(9,556)	336.29
Unvested RSUs as of December 31, 2022	120,550	106.49
Granted	161,161	34.49
Forfeited	(19,961)	109.19
Vested	(46,893)	112.02
Unvested RSUs As of December 31, 2023	214,857	51.03

There was approximately $16.7 million of total unrecognized compensation cost related to unvested stock options and RSUs as of December 31, 2023, which is expected to be recognized over a weighted-average period of 1.8 years.

The following table summarizes certain information about stock options granted under the stock option plans which are vested or expected to vest as of December 31, 2023 and December 31, 2022.

Years Ended December 31,		Number of Options	Weighted-Average Remaining Contractual Life (in years)		Weighted-Average Exercise Price
2023	Expected to be exercisable	349,662	7.15	$	172.13
2023	Currently exercisable	223,019	6.58	$	199.00
2022	Expected to be exercisable	457,097	6.59	$	191.07
2022	Currently exercisable	176,113	4.56	$	275.62

The following table summarizes certain information about stock options outstanding under the stock option plans for the years ended December 31, 2023 and December 31, 2022, respectively:

Year Ended December 31, 2023			
Exercise price	Number of Options Outstanding	Weighted- Average Remaining Life	Number of Options Exercisable
$12.30 - $46.50	67,401	7.65	27,084
$50.40 - $100.20	77,327	8.34	49,906
$122.40 - $174.90	64,477	7.35	35,163
$189.30 - $293.70	65,372	7.10	46,526
$305.10 - $480.00	75,085	5.33	64,340
	349,662		223,019

Year Ended December 31, 2022			
Exercise price	Number of Options Outstanding	Weighted- Average Remaining Life	Number of Options Exercisable
$0.60 - $46.50	67,565	7.03	20,547
$50.40 - $100.20	81,367	9.14	194
$122.40 - $136.80	73,906	7.13	47
$170.10 - $293.70	117,590	5.85	69,761
$305.10 - $480.00	116,669	4.96	85,564
	457,097		176,113

NOTE 4: RETIREMENT PLAN

In January 2011, the Company established a defined contribution 401(k) retirement savings plan (the "Retirement Plan") available to all full-time employees. Employee contributions to the Retirement Plan can be 100% of annual compensation up to the prescribed annual maximum under the Internal Revenue Code. Administrative fees of less than $0.1 million were paid by the Company for the years ended December 31, 2023 and December 31, 2022.

The Retirement Plan includes a safe-harbor matching employer contribution equal to 100% of participants' deferral contributions up to 4%. The Company made contributions of $0.9 million to the Retirement Plan during each of the years ended December 31, 2023 and December 31, 2022, respectively. Retirement plan contributions made by the Company are recorded to research and development expense and general and administrative expense as incurred and are included in the statements of operations.

NOTE 5: IMPAIRMENT CHARGES

The Company did not record any impairment charges in continuing operations during the year ended December 31, 2023. During the year ended December 31, 2022, the Company recorded impairment charges of $10.8 million related to the PCSK9 Prepaid as the Company made the decision to cease pursuit of PBGENE-PCSK9 for FH with iECURE as its partner. The impairment charge represented the remaining unamortized balance of the PCSK9 Prepaid.

NOTE 6: DISCONTINUED OPERATIONS

The Company determined that the sale of its cell therapy operations qualified for discontinued operations accounting treatment in accordance with ASC 205-20.

The historical balance sheet and statements of operations of the Company and the related notes to the financial statements have been presented as discontinued operations in the financial statements and prior periods have been recast. Discontinued operations include the results of the Company's historical cell therapy operations.

The following table shows amounts included in assets and liabilities of discontinued operations, respectively, on the Company's balance sheets as of December 31, 2023 and December 31, 2022:

	December 31, 2023	December 31, 2022
Current assets of discontinued operations		
Prepaid expenses	—	1,527
Assets held for sale	—	—
Other current assets	—	29
Total current assets of discontinued operations	—	1,556
Noncurrent assets of discontinued operations		
Property, equipment, and software—net	—	8,375
Intangible assets—net	—	617
Right-of-use assets—net	—	1,010
Other assets	—	2,344
Total noncurrent assets of discontinued operations	—	12,346
Total assets of discontinued operations	—	13,902
Current liabilities of discontinued operations		
Accounts payable	158	572
Accrued compensation	—	1,155
Accrued research and development expenses	2,355	1,379
Lease liabilities	—	359
Total current liabilities of discontinued operations	2,513	3,465
Noncurrent liabilities of discontinued operations		
Lease liabilities	—	1,717
Total noncurrent liabilities of discontinued operations	—	1,717
Total liabilities of discontinued operations	2,513	5,182

The following table summarizes the results of operations of the Company's discontinued operations for the years ended December 31, 2023 and 2022:

	For the Years Ended December 31,	
	2023	2022
Classes of expenses constituting loss from discontinued operations		
Research and development expense	(26,438)	(37,817)
General and administrative expense	(57)	(241)
Impairment of long lived assets	(641)	(594)
Loss on disposal of assets	(102)	(76)
Loss from discontinued operations related to classes of expenses	(27,238)	(38,728)
Gain from disposal of discontinued operations	8,446	—
Income tax benefit from discontinued operations	—	—
Loss from discontinued operations	(18,792)	(38,728)

The following table presents the significant non-cash items and proceeds from sales of assets related to discontinued operations for the years ended December 31, 2023 and 2022 that are included in the accompanying statements of cash flows:

	For the Years Ended December 31,	
	2023	2022
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,631	2,582
Share-based compensation	713	2,563
Impairment charges	641	594
Loss on disposal of assets	102	76
Gain on disposal of business	(8,446)	—
Cash flows provided by investing activities		
Proceeds from disposal of business	8,000	—
Proceeds from sale of equipment	37	—

NOTE 7: NET LOSS PER SHARE

The Company's potential dilutive securities have been excluded from the computation of diluted net loss per share as the effect of inclusion would be to reduce the net loss per share. Therefore, the weighted-average number of shares of common stock outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same.

	Years Ended December 31,	
	2023	2022
Loss from continuing operations (in thousands)	$ (42,527)	$ (72,909)
Loss from discontinued operations (in thousands)	$ (18,792)	$ (38,728)
Net loss (in thousands)	$ (61,319)	$ (111,637)
Weighted-average common shares outstanding basic and diluted	3,841,405	2,929,873
Loss per share basic and diluted:		
Loss from continuing operations	(11.07)	(24.88)
Loss from discontinued operations	(4.89)	(13.22)
Net loss per share, basic and diluted	(15.96)	(38.10)

The following weighted-average common stock equivalents were excluded from the calculation of diluted loss per share because their inclusion would have been anti-dilutive:

	Years Ended December 31,	
	2023	2022
Unvested restricted stock units	230,646	73,300
Stock Options	10,345	79,222
Unsettled ESPP contributions	8,065	2,044
Total common stock equivalents excluded from diluted net loss per share	249,056	154,566

NOTE 8: PROPERTY, EQUIPMENT AND SOFTWARE AND ASSETS HELD FOR SALE

PP&E consisted of the following as of December 31 (in thousands):

	2023	2022
Construction in progress	$ 70	$ 520
Leasehold improvements	11,945	11,946
Software	432	442
Laboratory equipment	15,856	17,271
Office equipment	1,399	1,408
Furniture and fixtures	2,124	2,097
Total property, equipment and software	31,826	33,684
Less accumulated depreciation and amortization	25,488	21,869
Property, equipment and software - net	$ 6,338	$ 11,815

Depreciation expense for continuing operations, including amortization of leasehold improvements and software, was $5.2 million for the years ended December 31, 2023 and 2022.

As of December 31, 2023, the Company had $0.5 million in property, plant, and equipment that met the criteria for classification as held for sale. These assets are recognized at the lower of net book value or fair value less costs to sell using a market approach. The Company evaluated the fair value of its assets held for sale and determined fair value of the assets held for sale less costs to sell exceeded net book value. Accordingly, the Company recorded an impairment of $0.5 million on assets held for sale during the year ended December 31, 2023 to reflect the difference between net book value and the fair value less costs to sell of assets held for sale. The related impairment is recognized in the accompanying statement of operations in the loss on disposal of assets line item.

NOTE 9: INTANGIBLE ASSETS

Intangible assets, net, consisted of the following as of December 31 (in thousands):

	2023	2022
License cost	$ 548	$ 910
Less: accumulated amortization	(148)	(179)
Intangible assets, net	$ 400	$ 731

Amortization expense of intangible assets was less than $0.1 million and $0.1 million for the years ended December 31, 2023 and December 31, 2022, respectively. Amortization expense for intangible assets with definite lives will be less than $0.1 million for each of the next five years with the remaining $0.2 million amortized to expense in 2029 and beyond.

NOTE 10: FAIR VALUE MEASUREMENTS

The following represents assets measured at fair value on a recurring basis by the Company (in thousands):

December 31, 2023	Fair Value	Level 1	Level 2	Level 3
Assets:				
Money market funds	$ 13,960	$ 13,960	$ —	$ —
Investment in iECURE	3,206	—	—	3,206
Imugene convertible note	11,897	—	11,897	—
Assets held for sale	487	—	—	487
	$ 29,550	$ 13,960	$ 11,897	$ 3,693
Liabilities:				
Final payment fee	$ 215	$ —	$ 215	$ —
	$ 215	$ —	$ 215	$ —

December 31, 2022	Fair Value	Level 1	Level 2	Level 3
Assets:				
Money market funds	$ 868	$ 868	$ —	$ —
Repurchase agreements	40,000	—	40,000	—
Investment in iECURE	2,576	—	—	2,576
	$ 43,444	$ 868	$ 40,000	$ 2,576
Liabilities:				
Final payment fee	$ 199	$ —	$ 199	$ —
	$ 199	$ —	$ 199	$ —

The following represents a reconciliation of assets measured and carried at fair value on a recurring basis with the use of significant unobservable inputs (Level 3) for the year ended December 31, 2023 (in thousands):

	Investment in iECURE
Balance December 31, 2022	$ 2,576
Additions	—
Gains from changes in fair value included in earnings	630
Balance December 31, 2023	$ 3,206

The carrying amounts of the Company's financial instruments, including accounts receivable, accounts payable, and accrued expenses and other current liabilities, approximate their respective fair values due to their short-term nature. The Company uses a three-tier fair value hierarchy to classify and disclose all assets and liabilities measured at fair value on a recurring basis and to minimize the use of unobservable inputs when determining their fair value. The three tiers are defined as follows:

Level 1—Observable inputs based on unadjusted quoted prices in active markets for identical assets or liabilities

Level 2—Inputs, other than quoted prices in active markets, that are observable either directly or indirectly

Level 3—Unobservable inputs for which there is little or no market data, which require the Company to develop its own assumptions

Cash Equivalents

As of December 31, 2023, the Company held cash equivalents which are composed of money market funds. As of December 31, 2022, the Company held cash equivalents which were composed of money market funds and repurchase agreements that were purchased through repurchase intermediary banks and collateralized by deposits in the form of government securities and obligations. The Company classifies investments in money market funds within Level 1 of the fair value hierarchy as the prices are available from quoted prices in active markets. Investments in repurchase agreements are classified within Level 2 of the fair value hierarchy as these instruments are valued using observable market inputs including reported trades, broker/dealer quotes, bids and/or offers.

Investment in iECURE

In August 2021, the Company entered into an Equity Issuance Agreement with iECURE, Inc. ("iECURE"), pursuant to which iECURE issued the Company common stock in iECURE (the "iECURE equity") as additional consideration for a license to use the Company's PCSK9-directed ARCUS nuclease to insert genes into the PCSK9 locus to develop treatments for four pre-specified rare genetic diseases (the "PCSK9 license"). On issuance, the Company accounted for the iECURE equity at fair value under ASC 825, *Financial Instruments* ("ASC 825"). Accordingly, the Company adjusts the carrying value of the iECURE equity to fair value each reporting period with any changes in fair value recorded to other income (expense). During the year ended December 31, 2023, the Company recorded a $0.6 million increase in the carrying value of its iECURE equity to adjust to fair value.

The Company classifies the iECURE equity within Level 3 of the fair value hierarchy as the assessed fair value was based on significant unobservable inputs given iECURE equity is not traded on a public exchange

Assets Held for Sale

The fair values of property, plant, and equipment held for sale is classified as Level 3 in the fair value hierarchy due to a mix of unobservable inputs utilized such as independent research in the market as well as actual quotes from market participants.

Imugene Convertible Note

As partial consideration for the assets acquired by Imugene in connection with the Purchase Agreement, Imugene US issued to the Company the Imugene Convertible Note in an aggregate principal amount of $13 million. The Imugene Convertible Note is non-interest bearing and matures on August 15, 2024. On the Maturity Date, the Imugene Convertible Note must be redeemed with cash, converted into ordinary shares of Imugene Limited at a conversion price based on the 10-day volume weighted average price of Imugene Limited's ordinary shares prior to the date of conversion, or partially redeemed with cash and partially converted into shares, at Imugene's discretion.

The Company classifies the Imugene Convertible Note within Level 2 of the fair value hierarchy as the assessed fair value is based on observable market inputs including the risk-free rate and the ordinary share price, volume, and volatility.

Final Payment Fee

The Company is required to pay a final payment fee upon maturity of the Revolving Line (as defined in Note 12, *Debt*, below). The final payment fee was determined to be a derivative under ASC 815, therefore these fees were initially measured at fair value and recorded as debt discount to be amortized to interest expense over the term of the Revolving Line. Accordingly, the Company will adjust the carrying value of the final payment fee to fair value each reporting period with any changes in fair value recorded to other income (expense). There was an assessed loss on change in fair value of the final payment fee of less than $0.1 million during the year ended December 31, 2023.

The Company classifies the final payment fee within Level 2 of the fair value hierarchy as the assessed fair value is based on observable market inputs including the Company's current borrowing rate. The final payment fee is included in other current liabilities within the balance sheet as of December 31, 2023 and other noncurrent liabilities within the balance sheet as of December 31, 2022.

NOTE 11: ELO TRANSACTION

On December 17, 2021, the Company and its then wholly-owned subsidiary, Elo Life Systems, Inc., entered into an agreement with a syndicate of investors, pursuant to which the Company contributed substantially all of the assets of Elo Life Systems, Inc. to a newly formed entity (the "Elo Transaction"). In connection with the Elo Transaction, the Company granted the newly formed entity ("Elo") an exclusive license to certain of the Company's intellectual property for use in non-medical applications with respect to plants, farm animals and certain other organisms. As consideration for the assets contributed and license granted by the Company to Elo, the Company received Common Stock in Elo and a $10.0 million promissory note payable from Elo (the "Note Receivable").

Investment in Elo

It was determined that the Company possesses the ability to exercise significant influence over the operating and financial policies of Elo. Accordingly, the Company accounts for its investment in Elo under the equity method.

The Company owned approximately 37% of Elo's voting shares outstanding as of December 31, 2023 and 2022. The Company's proportionate share of Elo's net loss for the years ended December 31, 2023 and 2022 was $4.9 million and $6.3 million, respectively. As the Company's cumulative proportionate share of Elo's net loss exceeded the carrying value of the investment in Elo, the carrying value of the Investment in Elo has been reduced to $0. In accordance with ASC 323, the Company will continue to record its proportionate share of Elo's net loss in the statements of operations along with a corresponding reduction in the carrying value of the Note Receivable.

Note Receivable

The Note Receivable matures on the earlier of (i) December 1, 2028 or (ii) a Deemed Liquidation Event (as defined in the Elo's Amended and Restated Certificate of Incorporation). The Note Receivable accrues interest at 2.00% per annum and is payable annually on December 17th.

As of December 31, 2023, the carrying value of the Note Receivable was $5.0 million including a $2.8 million decrease in the carrying value as a result of equity method investment losses. The remaining $5.0 million discount on the Note Receivable will be amortized to interest income over the life of the Note.

NOTE 12: DEBT

Pursuant to the terms of the loan and security agreement with Pacific Western Bank ("PWB") the Company may request advances on a revolving line of credit of up to an aggregate principal amount of $30.0 million (as amended from time to time, the "Revolving Line") at an interest rate equal to the greater of (a) 0.75% above the Prime rate (as defined in the Revolving Line) and (b) 4.25%. As of December 31, 2023, the stated interest rate on the Revolving Line was 9.25% and the effective interest rate was 10.3%.

The Revolving Line maturity date is June 23, 2024 and all outstanding principal amounts are due upon maturity. The Company must also maintain an aggregate balance of unrestricted cash at PWB (not including amounts in certain specified accounts) equal to or greater than $10.0 million.

As of December 31, 2023 and December 31, 2022, $22.5 million in borrowings were outstanding under the Revolving Line and the unamortized debt discount balance was less than $0.1 million and $0.3 million, respectively.

NOTE 13: COMMITMENTS AND CONTINGENCIES

Litigation

The Company is subject to various legal matters and claims in the ordinary course of business. Although the results of legal proceedings and claims cannot be predicted with certainty, in the opinion of management, there are currently no such known matters that will have a material effect on the financial condition, results of operations or cash flows of the Company.

Servier Program Purchase Agreement

On April 9, 2021, the Company entered into a program purchase agreement with Les Laboratoires Servier and Institut de Recherches Internationales Servier (collectively, "Servier"), pursuant to which the Company reacquired all of its global development and commercialization rights previously granted to Servier pursuant to the Development and Commercial License Agreement by and between Servier and the Company, dated February 24, 2016, as amended (the "Servier Agreement"), and mutually terminated the Servier Agreement (the "Program Purchase Agreement").

The Program Purchase Agreement requires the Company to make certain payments to Servier based on the achievement of regulatory and commercial milestones for each product. Management assessed the likelihood of each of the regulatory and commercial milestones included in the Program Purchase Agreement in accordance with ASC 450, Contingencies ("ASC 450"). If the assessment of a contingency indicates that it is probable that the milestone will be achieved and the amount of the liability can be estimated, then the estimated liability would be accrued in the Company's financial statements.

Accordingly, contingent liabilities of $10.0 million related to the Program Purchase Agreement are accrued and included in contract liabilities in the balance sheets as of December 31, 2023 and December 31, 2022.

Leases

The Company has an operating lease for real estate in North Carolina and does not have any finance leases.

On October 16, 2023, the Company and Venable Historic, LLC, successor-in-interest to Venable Tenant, LLC (the "Landlord"), entered into a Tenth Amendment to Lease Agreement (the "Lease Amendment"), which amended certain terms of the Lease Agreement dated April 5, 2010, as amended (the "Original Lease") with respect to the Company's headquarters facilities located in Durham, North Carolina. Among other things, the Lease Amendment extends the term of the Original Lease for an additional period of five years commencing upon August 1, 2024 and up to and through July 31, 2029.

The Company has existing leases in which the non-lease components (e.g., common area maintenance, consumables, etc.) are paid separately from rent based on actual costs incurred and therefore are not included in the right-of-use assets and lease liabilities but rather reflected as an expense in the period incurred.

The elements of lease expense were as follows:

(in thousands)	For the Years Ended December 31, 2023	2022
Lease Cost		
Operating lease cost	$ 2,043	$ 1,644
Short-term lease cost	742	563
Variable lease cost	692	746
Sublease income	(137)	—
Total Lease Cost	$ 3,340	$ 2,953
Other Information		
Operating cash flows used for operating leases	2,026	2,264
Operating right-of-use assets obtained in exchange for lease obligations	9,955	—
Operating lease liabilities arising from obtaining right-of-use assets	9,328	—
Operating Leases		
Weighted average remaining lease term (in years)	5.6	2.9
Operating Leases		
Weighted average discount rate	9.2%	7.7%

Future lease payments under non-cancelable operating leases with terms of greater than one year as of December 31, 2023, were as follows:

(in thousands)	December 31, 2023
2024	$ 1,888
2025	1,962
2026	2,019
2027	2,078
2028	2,140
2029 and beyond	1,269
Total lease payments	11,356
Less: imputed interest	2,500
Total operating lease liabilities	$ 8,856

Guarantees

The Company agreed to act as a guarantor of Imugene's assumption of the MCAT lease through the lease expiration date of August 31, 2027. If Imugene fails to pay rent due on the MCAT Lease, the lessor may have contractual recourse against the Company.

As of December 31, 2023, the Company's guarantee consists of a contingent liability for aggregate minimum lease payments of approximately $5.8 million. No contract liability for the Company's guarantee of Imugene's performance on the MCAT lease was recorded as of December 31, 2023, as it was not deemed probable that Imugene will be in default under the MCAT Lease.

Supply Agreements

The Company enters into contracts in the normal course of business with CMOs for the manufacture of clinical trial materials and CROs for clinical trial services. These agreements provide for termination at the request of either party with less than one-year notice and are, therefore, cancelable contracts and, if canceled, are not anticipated to have a material effect on the financial condition, results of operations, or cash flows of the Company.

NOTE 14: INCOME TAXES

The Company recorded no federal or state income tax expense and due to the operating losses incurred for the years ended December 31, 2023 and December 31, 2022.

Significant components of the Company's deferred tax assets and deferred tax liabilities are as follows (in thousands):

	Years Ended December 31,	
	2023	2022
Noncurrent deferred tax assets:		
Net operating loss carryforwards	$ 45,472	$ 36,457
Contribution carryforwards	34	48
Lease liability	2,116	1,120
Deferred revenue	20,337	30,022
Capitalized R&D costs	28,732	15,893
Other assets	14,962	14,279
Tax credits	30,757	24,721
Less: valuation allowance	(139,133)	(121,372)
Total deferred tax assets, noncurrent	3,277	1,168
Noncurrent deferred tax liability:		
Investments and other	—	476
Deferred gain - Imugene	1,303	—
Right of use asset	1,974	692
Total deferred tax liabilities, noncurrent	3,277	1,168
Net deferred tax assets	$ —	$ —

As of December 31, 2023 and December 31, 2022, the Company has provided a valuation allowance for the full amount of the net deferred tax assets as the realization of the net deferred tax assets is not determined to be more likely than not. The net increase in the valuation allowance for the year ended December 31, 2023 of $17.8 million is comprised of an increase in the valuation allowance recorded against the deferred tax assets, primarily related to tax credits and net operating loss ("NOL") carryforwards for the year.

The reasons for the difference between actual income tax benefit for the years ended December 31, 2023 and December 31, 2022 and the amount computed by applying the statutory federal income tax rate to losses before income tax benefit are as follows (in thousands):

	Year Ended December 31, 2023		Year Ended December 31, 2022	
	Amount	% of Pre-Tax Loss	Amount	% of Pre-Tax Loss
Income tax expense at statutory rate	$ (12,877)	21.0%	$ (23,444)	21.0%
State income taxes, net of federal tax benefit	(1,774)	2.9%	(250)	0.2%
Non-deductible expenses	85	0.0%	33	0.0%
Stock compensation - nondeductible	681	(1.2%)	599	(0.5%)
Stock compensation - forfeitures	3,176	(5.2%)	2,233	(2.0%)
R&D and orphan drug credits	(6,078)	9.9%	(3,790)	3.4%
Other	657	(1.1%)	314	(0.3%)
Change in state tax rate	(1,632)	2.7%	(3,004)	2.7%
Change in valuation allowance	17,762	(29.0%)	27,309	(24.5%)
Income tax (benefit) expense	$ —	0.0%	$ —	0.0%

As of December 31, 2023, the Company had federal and state NOL carryforwards of approximately $195.0 million and $166.8 million respectively. As of December 31, 2022, the Company had federal and state NOL carryforwards of approximately $159.5 million and $119.1 million, respectively.

The federal NOL carryforward million carries forward indefinitely. The state NOL carryforwards begin to expire in 2027. As of December 31, 2023, the Company had federal and state R&D tax credits of $17.2 million and an amount less than $0.1 million, which begin to expire in 2029 and 2030, respectively. As of December 31, 2022, the Company had federal and state tax R&D credits of $13.2 million and an amount less than $0.1 million. As of December 31, 2023 and December 31, 2021, the Company had federal

Orphan Drug credits of $13.5 million and $11.6 million, respectively, which begin to expire in 2038. As of December 31, 2023 and December 31, 2022, the Company had federal contribution carryforwards of $0.2 million which began to expire in 2023.

The Company's ability to utilize its NOL and R&D credit carryforwards may be substantially limited due to ownership changes that may have occurred or that could occur in the future, as required by Section 382 of the Internal Revenue Code of 1986, as amended (the Code), as well as similar state provisions. These ownership changes may limit the amount of NOL and R&D credit carryforwards that can be utilized annually to offset future taxable income and tax, respectively. In general, an "ownership change," as defined by Section 382 of the Code, results from a transaction or series of transactions over a three-year period resulting in an ownership change of more than 50 percent of the outstanding stock of a company by certain stockholders or public groups. The Company has not completed a study to assess whether one or more ownership changes have occurred since the Company became a loss corporation under the definition of Section 382. If the Company has experienced an ownership change, utilization of the NOL or R&D credit carryforwards would be subject to an annual limitation, which is determined by first multiplying the value of the Company's stock at the time of the ownership change by the applicable long-term, tax-exempt rate, and then could be subject to additional adjustments, as required. Any such limitation may result in the expiration of a portion of the NOL or R&D credit carryforwards before utilization. Until a study is completed and any limitation known, no amounts are being considered as an uncertain tax position or disclosed as an unrecognized tax benefit. Any carryforwards that expire prior to utilization as a result of such limitations will be removed from deferred tax assets with a corresponding reduction of the valuation allowance. Due to the existence of the valuation allowance, it is not expected that any possible limitation will have an impact on the results of operations of the Company.

The Company reflects in the accompanying financial statements the benefit of positions taken in a previously filed tax return or expected to be taken in a future tax return only if it is considered 'more-likely-than-not' that the position taken will be sustained by the appropriate taxing authority. As of December 31, 2023 and December 31, 2022, the Company had no unrecognized income tax benefits. The Company's policy for recording interest and penalties relating to uncertain income tax positions is to record them as a component of income tax expense in the accompanying statements of operations. As of December 31, 2023 and December 31, 2022, the Company had no such accruals.

In November 2021, North Carolina enacted the 2021 Appropriations Act, which included a gradual corporate income tax rate decrease from the current 2.5% to 0% by 2030. Due to the uncertainty of projecting income through 2030, the Company calculated, before consideration of the valuation allowance, its North Carolina net operating losses using the current 2.5% rate which is in effect through 2024. The Company will continue to monitor its future North Carolina taxable income and its ability to utilize its deferred tax asset for its net operating loss carryover. If the Company does not become profitable in North Carolina prior to 2025, or it becomes more certain that the Company will not be able to utilize its North Carolina net operating losses before the tax rate drops to 0%, the Company will then remeasure its deferred tax asset at that time

The TCJA of 2017 subjects a U.S. shareholder to tax on global intangible low-taxed income ("GILTI") earned by certain foreign subsidiaries. The FASB Staff Q&A, Topic 740, No. 5, *Accounting for Global Intangible Low-Taxed Income*, states that an entity can make an accounting policy election to either recognized deferred taxes for temporary basis differences expected to reverse as GILTI in future years or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense only. The Company has elected to account for GILTI in the year the tax is incurred. The Company does not have a GILTI inclusion in years ends December 31, 2023 or December 31, 2022 and therefore, no GILTI tax has been recorded for the years then ended.

NOTE 15: SEGMENT REPORTING

The Company has determined that the Chief Executive Officer ("CEO") is the Company's chief operating decision maker ("CODM") as the CEO makes decisions as it relates to allocation of resources and key market strategies. The CODM reviews financial information presented on a consolidated basis. Additionally, resource allocation and key market strategy decisions are made by the CODM based on consolidated results. As such, it was concluded that the Company operates as one segment.

NOTE 16: SUBSEQUENT EVENTS

TG License Agreement

On January 7, 2024, the Company entered into the TG License Agreement with TG Therapeutics, pursuant to which the Company granted TG Subsidiary certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize the Company's allogeneic CAR T therapy azer-cel for autoimmune diseases and other indications outside of cancer (collectively referred to as licensed products). For a description of the TG License Agreement refer to Note 2, *Collaboration and License Agreements.*

Caribou Biosciences

In February 2024, The Company announced that it had granted Caribou Biosciences, Inc. (“Caribou”), a leading CRISPR genome-editing cell therapy company, a non-exclusive, worldwide license, with the right to sublicense, to one of its foundational cell therapy patent families for use with CRISPR-based therapies in the field of human therapeutics. Under the terms of the agreement, the Company received an upfront payment and, upon commercialization by Caribou, will receive royalties on net sales of licensed products. In addition, for each occurrence of certain strategic transactions involving Caribou, the Company is eligible to receive a specific tiered milestone payment.

Reverse Stock Split

On February 13, 2024, the Company effected the Reverse Stock Split, pursuant to which every 30 shares of the Company’s common stock issued or outstanding were automatically reclassified into one new share of common stock, subject to the treatment of fractional shares as previously described, without any action on the part of the holders. For a description of the Reverse Stock Split, refer to Note 1, *Description of Business and Summary of Significant Accounting Policies—Reverse Stock Split*.

Common Stock Offering

In March 2024, the Company entered into an underwriting agreement relating to the issuance and sale of an aggregate of 2,500,000 shares of its common stock and warrants to purchase 2,500,000 shares of its common stock at a combined offering price of $16.00 per share. Each warrant has an exercise price per share of $20.00, is immediately exercisable and will expire on March 5, 2029. The offering was made pursuant to a registration statement on Form S-3. Gross proceeds from the transaction were $40.0 million before deducting underwriting discounts and commissions and offering expenses of approximately $2.9 million. In addition, the Company granted the underwriters a 30-day option to purchase up to an additional 375,000 shares of its common stock at $16.00 per share, less underwriting discounts and commissions.

Exhibit 4.6

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED

As of December 31, 2023, Precision BioSciences, Inc. had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). References herein to "we," "us," "our" and the "Company" refer to Precision BioSciences, Inc. and not to any of its subsidiaries.

The following description of our common stock and certain provisions of our amended and restated certificate of incorporation, as amended ("Certificate of Incorporation"), and amended and restated bylaws ("Bylaws") are summaries and are qualified in their entirety by reference to the full text of our Certificate of Incorporation and our Bylaws, each of which have been publicly filed with the Securities and Exchange Commission (the "SEC"). We encourage you to read our Certificate of Incorporation and our Bylaws and the applicable provisions of the Delaware General Corporation Law (the "DGCL") for additional information.

Authorized Capital Stock

Our authorized capital stock consists of 200,000,000 shares of common stock, par value $0.000005 per share, and 10,000,000 shares of preferred stock, par value $0.0001 per share, all of which are undesignated.

Common Stock

Holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. An election of directors by our stockholders shall be determined by a plurality of the votes cast. All other elections and questions presented to the stockholders shall be decided by the affirmative vote of the holders of a majority in voting power of the votes cast affirmatively or negatively (excluding abstentions) at the meeting by the holders entitled to vote thereon. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of any series of preferred stock that we may designate and issue in the future.

In the event of our liquidation or dissolution, the holders of our common stock are entitled to receive proportionately our net assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. Our outstanding shares of common stock are, and the shares offered by us in this offering will be, when issued and paid for, validly issued, fully paid and nonassessable. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Preferred Stock

Under the terms of our Certificate of Incorporation our board of directors is authorized to direct us to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of making it more difficult for a third-party to acquire, or could discourage a third-party from seeking to acquire, a majority of our outstanding voting stock.

Anti-takeover Provisions

Some provisions of Delaware law and our Certificate of Incorporation and our Bylaws could make the following transactions more difficult: an acquisition of us by means of a tender offer; an acquisition of us by means of a proxy contest or otherwise; or the removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in

their best interests or in our best interests, including transactions that provide for payment of a premium over the market price for our shares.

Undesignated Preferred Stock

The ability of our board of directors, without action by our stockholders, to issue up to 10,000,000 shares of undesignated preferred stock with voting or other rights or preferences as designated by our board of directors could impede the success of any attempt to effect a change in control of the Company. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of the Company.

Stockholder Meetings

Our Bylaws provide that a special meeting of stockholders may be called only by the chairman of our board of directors, our chief executive officer or president (in the absence of a chief executive officer), or by a resolution adopted by a majority of our board of directors.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our Bylaws establish advance notice procedures with respect to stockholder proposals to be brought before a stockholder meeting and the nomination of candidates for election as directors, other than nominations made by or at the direction of our board of directors or a committee of our board of directors.

Elimination of Stockholder Action by Written Consent

Our Certificate of Incorporation eliminates the right of stockholders to act by written consent without a meeting.

Staggered Board

In accordance with our Certificate of Incorporation our board of directors is divided into three classes. The directors in each class serve for a three-year term, with one class being elected each year by our stockholders. Our Certificate of Incorporation and Bylaws provide that the authorized number of directors may be changed only by resolution of the board of directors. Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors. This system of electing and removing directors may delay or prevent a change of our management or a change in control of our company and may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Removal of Directors

Our Certificate of Incorporation provides that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of the holders of at least two-thirds in voting power of the outstanding shares of stock entitled to vote in the election of directors.

Stockholders not Entitled to Cumulative Voting

Our Certificate of Incorporation does not permit stockholders to cumulate their votes in the election of directors. Accordingly, the holders of a majority of the shares of our common stock entitled to vote in any election of directors will be able to elect all of the directors standing for election, if they choose, other than any directors that holders of our convertible preferred stock may be entitled to elect.

Choice of Forum

Our Certificate of Incorporation provides that, unless we consent in writing to the selection of an alternative forum to the fullest extent permitted by law, the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of

a fiduciary duty or other wrongdoing by any of our directors, officers, employees or agents to us or our stockholders, (3) any action asserting a claim against us arising pursuant to any provision of the General Corporation Law of the State of Delaware or our certificate of incorporation or bylaws, or (4) any action asserting a claim governed by the internal affairs doctrine. Under our Certificate of Incorporation, this exclusive forum provision does not apply to claims which are vested in the exclusive jurisdiction of a court or forum other than the Court of Chancery of the State of Delaware, or for which the Court of Chancery of the State of Delaware does not have subject matter jurisdiction. For instance, the provision would not apply to actions brought to enforce any liability or duty created by the Exchange Act or the rules and regulations thereunder. Our Certificate of Incorporation also provides that any person or entity holding, purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of and to have consented to this choice of forum provision. It is possible that a court of law could rule that the choice of forum provision contained in our Certificate of Incorporation is inapplicable or unenforceable if it is challenged in a proceeding or otherwise.

Our Bylaws provide that, unless the Corporation consents in writing to the selection of an alternative forum, to the fullest extent permitted by law, the federal district courts of the United States of America shall be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act of 1933, as amended, and that any person or entity purchasing or otherwise acquiring or holding any interest in shares of capital stock of the Corporation shall be deemed to have notice of and consented to such provision.

Amendment of Charter Provisions

The amendment of any of the above provisions, except for the provision making it possible for our board of directors to issue preferred stock and the provision prohibiting cumulative voting, would require approval by holders of at least two-thirds in voting power of the outstanding shares of stock entitled to vote thereon.

Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the General Corporation Law of the State of Delaware (the "DGCL"), which prohibits persons deemed to be "interested stockholders" from engaging in a "business combination" with a publicly held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by our board of directors.

Exhibit 10.2

Certain information marked as [***] has been excluded from this exhibit because it is both not material and is the type that the registrant treats as private or confidential.

LICENSE AGREEMENT

by and among

TG THERAPEUTICS, INC.,

TG CELL THERAPY, INC.

and

PRECISION BIOSCIENCES, INC.

LICENSE AGREEMENT

This **License Agreement** ("***Agreement***") is entered into as of January 7, 2024 (the "***Effective Date***"), by and among **Precision BioSciences, Inc.**, a corporation organized and existing under the laws of Delaware, having an address at 302 East Pettigrew St., Suite A-100, Durham, North Carolina 27701 ("***Precision***"), **TG Cell Therapy, Inc.**, a corporation organized and existing under the laws of Delaware, with its principal business office located at 3020 Carrington Mill Blvd, Suite 475, Morrisville, North Carolina 27560 ("***TGTX***"), and, with respect to Sections 8.14 and 15.18 (including the other sections or subsections referred to therein or applicable thereto), **TG Therapeutics, Inc.**, a corporation organized and existing under the laws of Delaware, with its principal business office located at 3020 Carrington Mill Blvd, Suite 475, Morrisville, North Carolina 27560 ("***TGTX Parent***"). TGTX and Precision are each hereafter referred to individually as a "***Party***" and together as the "***Parties***."

WHEREAS, Precision is a Nasdaq-listed, genome-editing and cell therapy company, which leverages its proprietary ARCUS Technology (as defined below) that is based on I-CREI derived engineered meganucleases and cell therapy platform to develop, manufacture, and commercialize allogeneic CAR-T (as defined below) products and for in vivo gene editing for the treatment of genetic disease;

WHEREAS, TGTX and its Affiliates, including its parent, TGTX Parent, are engaged in the research, development, and commercialization of pharmaceutical products targeting B-cell diseases and conditions; and

WHEREAS, TGTX desires to obtain from Precision, and Precision desires to grant to TGTX, certain exclusive and non-exclusive license rights to develop, manufacture, and commercialize Precision's current investigational cell therapy product, known as "azer-cel," for treatment of autoimmune and other non-oncology diseases and conditions, all subject to the terms and conditions of this Agreement.

NOW, **THEREFORE**, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE 1

DEFINITIONS

Capitalized terms used in this Agreement and the Schedules and Exhibits hereto shall have the following meanings (or as defined elsewhere in this Agreement):

1.1 "***Acquirer***" has the meaning set forth in the definition of Change of Control.

1.2 "***Active Ingredient***" means, with respect to a Combination Product, an active therapeutic ingredient having a different therapeutic target or mode of action, or which is otherwise treated or designated by the applicable Regulatory Authority as a separate active ingredient, than the applicable Licensed Product.

1.3 "***Affiliate***" means, with respect to any Person, any entity that, at the relevant time (whether as of the Effective Date or thereafter), directly or indirectly through one or more intermediaries, controls, is controlled by, or is under common control with such Person, for so long as such control exists. As used in this Section 1.3, "control" means: (a) to possess, directly or indirectly, the power to direct or cause the direction of the management or policies of an entity, whether through ownership of voting securities or by contract relating to voting rights or corporate governance; or (b) direct or indirect ownership of fifty percent (50%) (or such lesser percentage that is the maximum allowed to be owned by a foreign entity in a particular jurisdiction) or more of the voting share capital or other equity interest in such entity. Notwithstanding anything to the contrary in this Agreement, Precision, on the one hand, and TGTX, on the other hand, shall not be considered Affiliates of each other.

1.4 "***Agreement***" has the meaning set forth in the Preamble.

1.5 "***Applicable Laws***" means the applicable provisions of any and all federal, national, supranational, regional, state and local laws, treaties, statutes, rules, regulations, guidelines or requirements, administrative codes, guidance, ordinances, judgments, decrees, directives, injunctions, orders, or permits of or from any court, arbitrator, Regulatory Authority, Governmental Authority, taxing authority, national securities exchange or exchange listing organization having jurisdiction over or related to the relevant subject item that may be in effect from time to time during the Term.

1.6 "***ARCUS Nuclease***" means any fully synthetic nuclease derived from a homing endonuclease and made using the ARCUS Technology.

1.7 "***ARCUS Regulatory Matters***" has the meaning set forth in Section 4.1.3.

1.8 "***ARCUS Technology***" means Precision's proprietary genome editing platform known as ARCUS™, relating to the design, creation, selection, development, optimization and delivery of fully synthetic enzymes derived from homing endonucleases, including any modifications or improvements to the foregoing.

1.9 "***Background IP***" means TGTX Background IP or Precision Background IP, as applicable.

1.10 "***Bayh-Dole Act***" has the meaning set forth in Section 10.2.6.

1.11 "***Biosimilar Product***" means a product that is developed and commercialized by a Third Party, without any involvement (contractual or otherwise) of TGTX or its Affiliates, that the applicable Regulatory Authority has determined is a biosimilar to the Licensed Product, meaning it is highly similar to and has no clinically meaningful differences from the Licensed Product, that is approved by an abbreviated marketing authorization process that relies on the Marketing Authorization of the Licensed Product as the original or reference biological product as to which the determination of biosimilarity is made, and that is approved for use in the Licensed Field.

1.12 "***BLA***" means a Biologic License Application (as more fully described in U.S. 21 C.F.R. Part 601.20 or its successor regulation), as may be amended from time to time, or any analogous application or submission with any Regulatory Authority outside of the United States.

1.13 "***Business Day***" means any day, other than any Saturday, Sunday, or any day that banks are authorized or required to be closed in Durham, North Carolina, or New York, New York.

1.14 "***Calendar Quarter***" means each respective period of three (3) consecutive months ending on March 31, June 30, September 30, and December 31 of any Calendar Year.

1.15 "***Calendar Year***" means each respective period of twelve (12) consecutive months commencing on January 1 and ending on December 31.

1.16 "***CAR-T***" means human T cells genetically engineered *ex vivo* with Chimeric Antigen Receptor(s).

1.17 "***CD19***" means B-lymphocyte antigen CD19.

1.18 "***Cellectis Agreement***" has the meaning set forth in Section 7.5.2.

1.19 "***Cellectis Patents***" has the meaning set forth in Section 7.5.2.

1.20 "***Cellectis S.A.***" has the meaning set forth in Section 7.5.2.

1.21 "***Change of Control***" means, with respect to a Person: (a) the acquisition by a person or group (each as used in this definition uncapitalized, such terms have the meanings specified in Section 13(d) of the Exchange Act and Rule 13d-3 thereunder), in one transaction or a series of related transactions, of direct or indirect beneficial ownership of more than fifty percent (50%) of the outstanding voting equity securities of such Person (excluding, for clarity, an acquisition by a person or group where the equity holders of such acquired Person or its parent immediately prior to such transaction hold a majority of the outstanding voting equity securities of the surviving entity or the parent of the surviving entity immediately following such transaction); (b) a merger, reorganization or consolidation involving such Person as a result of which (1) a person or group acquires direct or indirect beneficial ownership of more than fifty percent (50%) of the voting power of the surviving entity immediately after such merger, reorganization or consolidation and (2) the voting securities of such Person outstanding immediately prior to such merger, reorganization or consolidation, or any securities into which such voting securities have been converted or exchanged, cease to represent more than fifty percent (50%) of the combined voting power of the surviving entity or the parent of the surviving entity immediately following such merger, reorganization or consolidation; or (c) a sale, exclusive license or other transfer of all or a material part of the assets of such Person related to the transactions contemplated by this Agreement in one transaction or a series of related transactions to a person or group. The acquiring or combining person or group in any of (a), (b) or (c), and any of such person's or group's Affiliates (whether in existence as of or any time following the applicable transaction, but other than such acquired Person and its Affiliates as in existence prior to the applicable transaction or Affiliates it controls after the applicable transaction) are referred to collectively herein as the "***Acquirer***."

1.22 "***Chimeric Antigen Receptor***" means a genetically engineered molecule that (a) when present on the surface of human T cells, enables the T cells to recognize and bind to specific antigens that are present on the surface of cells, and (b) comprises a single-chain antibody fragment (scFv), a transmembrane domain, and at least one intracellular signaling domain.

1.23 "***Claim***" has the meaning set forth in Section 11.1.1.

1.24 "***Clinical Trial***" means a clinical study conducted on certain numbers of human subjects (depending on the phase of the trial) that is designed to (a) establish that a product for the treatment of human diseases and conditions is reasonably safe for continued testing, (b) investigate the safety and efficacy of the product for its intended use, and to define warnings, precautions and adverse reactions that may be associated with the product in the dosage range to be prescribed, or (c) support Marketing Authorization or Pricing and Reimbursement Approval of such product or label expansion of such product.

1.25 "***CMO***" means contract manufacturing organization.

1.26 "***Code***" has the meaning set forth in Section 13.7.

1.27 "***Combination Product***" has the meaning set forth in the definition of Net Sales.

1.28 "***Commercial Milestone Payment***" has the meaning set forth in Section 8.4.

1.29 "***Commercialization***" means any and all activities directed to the commercial exploitation of a Licensed Product, including: (a) activities directed to storing, marketing, promoting, detailing, distributing, importing, exporting, selling and offering to sell that Licensed Product; (b) conducting Clinical Trials after Marketing Authorization of a Licensed Product with respect to such Licensed Product; (c) interacting with Regulatory Authorities regarding the foregoing; and (d) seeking Regulatory Approvals (as applicable) for and registration of that Licensed Product; *provided* that seeking Marketing Authorization constitutes Development and not Commercialization. When used as a verb, "to ***Commercialize***" and "***Commercializing***" means to engage in Commercialization and "***Commercialized***" has a corresponding meaning.

1.30 "***Commercially Reasonable Efforts***" means:

1.30.1 with respect to the obligations of a Party under this Agreement relating to Development activities, the level of efforts and expenditure of resources required to carry out such obligation in a sustained manner consistent with the efforts and resources such Party or its Affiliates typically devotes to a product of similar market potential, resulting from its own research efforts or development and commercialization collaborations for which it is responsible, at a similar stage in its development or product life, taking into account Relevant Factors;

1.30.2 with respect to the level of obligations of a Party under this Agreement relating to Commercialization activities, the level of efforts and expenditure of resources required to carry out such obligation in a sustained manner consistent with the efforts and resources of a typical Third Party biopharmaceutical company of similar size and with similar resources as such Party or its Affiliates typically devotes to a product of similar market potential, at a similar stage in its development or product life, taking into account Relevant Factors; or

1.30.3 with respect to the obligations of a Party under this Agreement relating to any other objective, reasonable, good-faith efforts, taking into account industry practices.

Provided that, if in consideration of the Relevant Factors (or, as it relates to Section 1.30.3, industry practices), Commercially Reasonable Efforts requires any act to be performed, with respect to such performance and for the period of time during which Commercially Reasonable Efforts dictates such performance, Commercially Reasonable Efforts requires that the applicable Party (a) promptly assign responsibility for obligations to specific employee(s) who are held accountable for progress and monitor such act on an on-going basis, (b) set and consistently seek to achieve specific, meaningful and measurable objectives for carrying out such act, and (c) consistently make and implement decisions and allocate resources designed to advance progress with respect to such act.

1.31 [***].

1.32 "***Confidential Proprietary Information***" has the meaning set forth in Section 12.1.1.

1.33 "***Confidentiality Agreement***" means that certain Confidentiality Agreement entered into between the Parties as of September 11, 2023.

1.34 "***Control***" or "***Controlled***" means, with respect to any Know-How, Patents, other intellectual property rights, Clinical Data and Documentation, or Regulatory Filings, that a Party has the legal authority or right (whether by ownership, license, or otherwise, but without taking into account any rights granted by one Party to the other Party pursuant to this Agreement) to grant to the other Party a license, covenant not to sue, sublicense, access, or right to use (as applicable) under such Know-How, Patents, or other intellectual property rights, on the terms and conditions set forth herein, in each case without violating any obligations of the granting Party owed to a Third Party or breaching the terms of any agreement with a Third Party.

1.35 "***Cover***" means, with respect to a claim of a Patent and given product or other subject matter, that such claim would be infringed, in the absence of a license, or ownership, by the Exploitation of such product or other subject matter (considering claims of patent applications to be issued as then pending).

1.36 "***Currently Outstanding Precision Common Stock***" refers to the number of shares of Precision Common Stock that are issued and outstanding as of the applicable date.

1.37 "***Development***" means all activities related to the development of products, including Licensed Products, for the treatment of human diseases and conditions. When used as a verb, "***Develop***" or "***Developing***" means to engage in Development and "***Developed***" has a corresponding meaning.

1.38 "***Development Records***" has the meaning set forth in Section 3.2.1.

1.39 "***Disclosing Party***" has the meaning set forth in Section 12.1.2.

1.40 "***Dispute***" has the meaning set forth in Section 14.2.

1.41 "***Distributor***" means, as applicable, with respect to a given Licensed Product, any Person appointed by (a) TGTX, (b) any of TGTX's Affiliates or (c) any of their respective Sublicensees that is not an Affiliate of (a) or (b), to distribute, market and sell the Licensed Product in one or more countries in the Territory, in circumstances where the Person (x) purchases its requirements of the Licensed Product from TGTX for their respective Affiliates or its or their Sublicensees but (y) has no right to conduct any Development or Manufacturing (other than packaging) activities with respect to such Licensed Product.

1.42 "***Dollar***" means a U.S. dollar, and "***$***" is to be interpreted accordingly.

1.43 "***Duke***" has the meaning set forth in the definition of Duke Agreement.

1.44 "***Duke Agreement***" means the License Agreement entered into by Precision and Duke University ("***Duke***") on April 17, 2006, as amended by the Amendment, dated May 31, 2007, and as further amended by the Letter Agreements, dated December 10, 2007, February 13, 2009, January 17, 2012, December 6, 2013, December 13, 2013, and February 4, 2014, and as further amended from time to time.

1.45 "***Duke IP***" means all Patents and Know-How licensed to Precision under the Duke Agreement that constitute Precision Background IP. The patent numbers and patent application numbers of the Patents that are included within the Duke IP as of the Effective Date are set forth in Schedule 1.45.

1.46 "***Effective Date***" has the meaning set forth in the Preamble.

1.47 "***Equity Termination Event***" has the meaning set forth in Section 8.2.5.

1.48 "***E.U.***" means, except as set forth in Section 8.5, the European Union as constituted on the Effective Date.

1.49 "***Exchange Act***" has the meaning set forth in Section 8.2.2(e).

1.50 "***Exchange Cap***" refers to the maximum number of Precision Shares that may be issued pursuant to this Agreement, it being acknowledged and agreed that in no event shall the Precision Shares that may be issued pursuant to the terms of this Agreement exceed either of the following: (a) 19.99% of the Currently Outstanding Precision Common Stock as of the Effective Date of this Agreement; or (b) with respect to a "change of control" (as defined by Nasdaq Listing Rule 5635), the number of shares of Precision Common Stock that would result in beneficial ownership of more than 19.99% of the Currently Outstanding Precision Common Stock following such issuance, in each case (i) subject to appropriate adjustments being made in respect of any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split, reconstruction, consolidation, division, reclassification of such shares into a lesser or greater number of securities or other similar transaction that occurs after the Effective Date and (ii) in accordance with the rules and regulations of Nasdaq.

1.51 "***Executive Officers***" means (a) with respect to Precision, [***], and (b) with respect to TGTX, [***]; or the successor of such person in the foregoing (a) or (b) or any other person that such person in the foregoing (a) or (b) designates from time to time.

1.52 "***Existing In-License Agreements***" means the Duke Agreement and the Cellectis Agreement.

1.53 "***Existing Patents***" has the meaning set forth in Section 10.2.2.

1.54 "***Existing Third Party Agreements***" has the meaning set forth in Section 10.2.3.

1.55 "***Exploit***" means to Research, Develop, Manufacture, Commercialize and otherwise exploit. "***Exploitation***" has correlating meaning.

1.56 "***Extraordinary Matter***" has the meaning set forth in Section 8.2.7.

1.57 "***FDA***" means the United States Food and Drug Administration or any successor agency thereto.

1.58 "***Final Precision Stock Issuance***" has the meaning set forth in Section 8.2.1(d).

1.59 "***Final Precision Stock Payment***" has the meaning set forth in Section 8.2.1(d).

1.60 "***First Commercial Sale***" means, with respect to a Licensed Product, the first sale of such Licensed Product by the applicable Selling Party to a Third Party for end use or consumption of such Licensed Product in a given country in the Territory after Marketing Authorization required to market and sell the Licensed Product has been granted with respect to such Licensed Product by the applicable Regulatory Authority in such country in which such Licensed Product is sold.

1.61 [***].

1.62 "***Good Clinical Practices***" or "***cGCP***" means all applicable current Good Clinical Practice standards for the design, conduct, performance, monitoring, auditing, recording, analysis and reporting of Clinical Trials, including, as applicable: (a) as set forth in the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use ("***ICH***") E6 and any other guidelines for good clinical practice for trials on medicinal products in the Territory; (b) the Declaration of Helsinki (2004) as last amended at the 52nd World Medical Association in October 2000 and any further amendments or clarifications thereto; (c) U.S. Code of Federal Regulations Title 21, Parts 50, 54, 56, 312 and 314, as may be amended from time to time; and (d) the equivalent Applicable Laws in any relevant country, each as may be amended and applicable from time to time, and in each case ((a)-(d)), that provide for, among other things, assurance that the clinical data and reported results are credible and accurate and protect the rights, integrity, and confidentiality of trial subjects.

1.63 "***Good Laboratory Practices***" or "***GLPs***" means all applicable Good Laboratory Practice standards, including, as applicable: (a) as set forth in the then-current good laboratory practice standards promulgated or endorsed by the FDA as defined in 21 C.F.R. Part 58; and (b) the equivalent Applicable Laws in any relevant country, each as may be amended and applicable from time to time.

1.64 "***Good Manufacturing Practices***" or "***cGMP***" means all applicable current Good Manufacturing Practices including, as applicable: (a) the principles detailed in the US Current Good Manufacturing Practices, 21 C.F.R. Parts 4, 210, 211, 601, 610 and 820; (b) European Directive 2003/94/EC and Eudralex 4; (c) the principles detailed in the WHO TRS 986 Annex 2, TRS 961 Annex 6, TRS 957 Annex 2, and TRS 999 Annex 2; (d) ICH Q7 guidelines; and (e) the equivalent Applicable Laws in any relevant country, each as may be amended and applicable from time to time.

1.65 "***Government Official***" has the meaning set forth in Section 10.6.4.

1.66 "***Governmental Authority***" means any national, international, federal, state, provincial or local government, or political subdivision thereof, or any multinational organization or any authority, agency or commission entitled to exercise any administrative, executive, judicial, legislative, police, regulatory or taxing authority or power, and any court or tribunal (or any department, bureau or division thereof, or any governmental arbitrator or arbitral body).

1.67 "***Holding Period***" has the meaning set forth in Section 8.2.6.

1.68 "***ICD-11***" means the 11th revision of the International Classification of Diseases of the World Health Organization or a successor thereto.

1.69 "***ICH***" has the meaning set forth in the definition of Good Clinical Practices.

1.70 "***Imugene***" means Imugene (USA) Inc.

1.71 "***IND***" means an investigational new drug application filed with the FDA or any similar application filed with a Regulatory Authority in a country outside the U.S. required to commence Clinical Trials of a pharmaceutical product.

1.72 "***Indemnitee***" has the meaning set forth in Section 11.1.3.

1.73 "***Indemnitor***" has the meaning set forth in Section 11.1.3.

1.74 "***Infringement***" has the meaning set forth in Section 9.3.1.

1.75 "***Initiation***" means with respect to any Clinical Trial, the enrollment of the first human subject in such Clinical Trial.

1.76 "***Initiation Deadline***" has the meaning set forth in Section 3.1.2.

1.77 "***Insolvency Event***" means any of the events set out in Section 13.2.3.

1.78 "***Internal Compliance Codes***" has the meaning set forth in Section 10.6.2.

1.79 "***Inventions***" means all Know-How and inventions, whether or not patentable, and all rights, title and interest in and to the intellectual property rights (including Patent rights) therein.

1.80 "***Joint IP***" has the meaning set forth in Section 9.1.2.

1.81 "***Joint Patents***" means any Patent constituting or claiming any Joint IP.

1.82 "***JSC***" has the meaning set forth in Section 2.3.1.

1.83 "***Know-How***" means any proprietary scientific, clinical or technical information, inventions, discoveries, results and data of any type whatsoever, in any tangible or intangible form, including databases, safety and efficacy information, practices, methods, instructions, techniques, processes, drawings, documentation, specifications, formulations, formulae, knowledge, know-how, trade secrets, materials, skill, experience, test data and other information and technology applicable to formulations, compositions or products or to their Exploitation or to methods of assaying or testing them, including pharmacological, pharmaceutical, medicinal chemistry, biological, chemical, biochemical, toxicological and clinical test data, physical and analytical, safety, quality control data, manufacturing, and stability data, studies and procedures, and manufacturing process and development information, results and data.

1.84 "***Knowledge***" means the actual knowledge of each of Precision's Chief Executive Officer, Chief Research Officer, Chief Financial Officer, Chief Business Officer and Vice President of Intellectual Property after due inquiry.

1.85 "***Licensed ARCUS Nuclease***" means [***].

1.86 "***Licensed Field***" means the treatment, prevention, cure, mitigation or palliation of any and all human diseases, conditions or disorders, excluding the treatment, prevention, cure, mitigation and palliation of any and all cancers (i.e., diseases, conditions or disorders identified in chapter 2 ("Neoplasms") of the ICD-11).

1.87 "***Licensed Product***" means the investigational allogeneic CAR-T product directed to CD19 known as "azercabtagene zapreleucel" or "azer-cel" and having the Precision internal designation PBCAR0191, including any preparation, formulation, dosage, packaging or method of administration thereof.

1.88 "***Licensed Product Trademarks***" has the meaning set forth in Section 9.8.

1.89 "***Lock-Up Securities***" has the meaning set forth in Section 8.2.6.

1.90 "***Losses***" has the meaning set forth in Section 11.1.1.

1.91 [***]

1.92 "***Manufacture***" and "***Manufacturing***" means any and all activities related to the production, manufacture, formulation, finishing, packaging, labeling, shipping and holding of a Licensed Product, or other product or therapy, or any component, intermediary or precursor thereof (including, for clarity, [***]), and including process development, process qualification and validation, scale-up, pre-clinical, clinical and commercial manufacture, characterization, quality assurance and quality control (including testing).

1.93 "***Marketing Authorization***" means, with respect to a particular Licensed Product in a particular country or regulatory jurisdiction, collectively, all Regulatory Approvals (including any Pricing and Reimbursement Approval or access approvals, if applicable) required by the relevant Regulatory Authority in order to initiate marketing, selling or Commercializing a Licensed Product in such country or jurisdiction.

1.94 "***MaxCyte***" has the meaning set forth in Section 8.5.

1.95 "***MaxCyte Agreement***" means the License Agreement entered into by Precision and MaxCyte on November 12, 2018, as amended by the Amendment, dated as of April 1, 2020, and as further amended from time to time.

1.96 "***Medical Affairs***" means activities conducted by a Party's medical affairs departments (or, if a Party does not have a medical affairs department, the equivalent function thereof), including communications with key opinion leaders, medical education, symposia, advisory boards (to the extent related to medical affairs or clinical guidance), activities performed in connection with patient registries, and other medical programs and communications, including educational grants, research grants (including conducting investigator-initiated studies), and charitable donations to the extent related to medical affairs related to the Licensed Product and not to other activities that do not involve the promotion, marketing, sale, or other Commercialization of the Licensed Product and are not conducted by a Party's medical affairs (or equivalent) departments. Medical Affairs excludes any activities directed to Manufacturing, Development, or Commercialization.

1.97 "***Medical Affairs Plan***" means, with respect to the Licensed Product, the written high-level strategic and tactical plans for the Medical Affairs activities for such Licensed Product to be conducted in the Licensed Field in the Territory that will be prepared and updated by TGTX as provided in Section 4.6.

1.98 "***Milestone 1 Precision Stock Issuance***" has the meaning set forth in Section 8.2.1(c).

1.99 "***Milestone 1 Precision Stock Payment***" has the meaning set forth in Section 8.2.1(c).

1.100 "***Milestone Event***" means any milestone event set forth in Section 8.3 or Section 8.4.

1.101 "***Minimum Price***" means the price that is the lower of the following: (a) the Nasdaq official closing price (as reflected on Nasdaq.com) immediately preceding the signing of this Agreement; or (b) the average Nasdaq official closing price of the Precision Common Stock (as reflected on Nasdaq.com) for the five Trading Days immediately preceding the signing of this Agreement. For purposes of this Agreement, the Minimum Price is $0.3722 per share, subject to appropriate adjustments being made in respect of any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split, reconstruction, consolidation, division, reclassification of such shares into a lesser or greater number of securities or other similar transaction that occurs after the Effective Date.

1.102 "***Nasdaq***" means the Nasdaq Stock Market LLC.

1.103 "***Net Sales***" means [***].

The foregoing amounts shall be determined from the books and records of the Selling Party, maintained in accordance with U.S. GAAP, consistently applied. [***]. In the case of sale or disposal of the applicable Licensed Product for consideration other than exclusively monetary consideration, Net Sales for such Licensed Product shall be the value of the non-cash consideration received, as determined in accordance with U.S. GAAP. In no event will any particular amount identified above be deducted more than once in calculating Net Sales. Sales of the applicable Licensed Product between the individual Selling Parties for such Licensed Product for resale shall be excluded from the computation of Net Sales (unless such Licensed Product is consumed by such Selling Party), but the subsequent resale of such Licensed Product by such Selling Party to a Third Party shall be included within the computation of Net Sales. Licensed Products transferred as part of an expanded access program, compassionate sales or use program, an indigent program, as *bona fide* samples, as donations, or for the performance of Clinical Trials, shall not be included in Net Sales for such Licensed Product.

For purposes of determining Net Sales of the Licensed Product sold in combination with or as part of a bundle with other products, or in packaged arrangements to customers that include the Licensed Product, in each case other than Combination Products (which are addressed below), [***].

In the event that the Licensed Product is sold as part of a Combination Product (where "***Combination Product***" means any pharmaceutical product which comprises the Licensed Product and one or more other Active Ingredients that do not constitute the Licensed Product, whether co-formulated, co-packaged or otherwise sold together for one price), the Net Sales of the Licensed Product, for the purposes of determining royalty payments, shall be determined by [***].

[***].

1.104 "***Parent Obligations***" has the meaning set forth in Section 15.18.1.

1.105 "***Party***" and "***Parties***" has the meaning set forth in the Preamble.

1.106 "***Patent Defense Matters***" means the conduct of interferences, derivation proceedings, *inter partes* review and post-grant review, the defense of oppositions and other similar proceedings with respect to a Patent, excluding any activities associated with claims, including as a counterclaim or declaratory judgment action, of unpatentability, invalidity or unenforceability of such Patent that are brought by a Third Party in connection with an alleged or threatened infringement by a Third Party of a Patent.

1.107 "***Patents***" mean: (a) pending patent applications, issued patents, utility models and designs; (b) reissues, substitutions, confirmations, registrations, validations, re-examinations, additions, continuations, continued prosecution applications, continuations-in-part, or divisions of or to any of the foregoing; and (c) extensions, renewals or restorations of any of the foregoing by existing or future extension, renewal or restoration mechanisms, including supplementary protection certificates or the equivalent thereof.

1.108 "***Permitted Transferee***" means TGTX Parent or any entity controlled by TGTX Parent that is an Affiliate of TGTX and to whom the Shares are being transferred without consideration; *provided*, however, that no such Person shall be deemed a Permitted Transferee for any purpose under this Agreement unless (a) the Permitted Transferee, prior to or simultaneously with any transfer of Shares to such Affiliate, shall have agreed in writing to be subject to and bound by, and makes the representations and warranties set forth in, Sections 8.2.3, 8.2.4, 8.2.6, 8.2.7 and 8.2.8 (and all other provisions of this Agreement referred to therein or applicable thereto) as though it were "TGTX" or "TGTX Parent" hereunder, as applicable (including specifically executing an irrevocable proxy to vote the Shares as required by Section 8.2.7), (b) each of TGTX and TGTX Parent acknowledges and agrees that it continues to be bound by the terms of this Agreement, and (c) TGTX provides written documentation, reasonably acceptable to Precision, that such permitted transfer complies with all applicable securities laws.

1.109 "***Person***" means any corporation, limited or general partnership, limited liability company, joint venture, trust, unincorporated association, governmental body, authority, bureau or agency, any other entity or body, or an individual.

1.110 "***Phase I Clinical Trial***" means a Clinical Trial that would satisfy the requirements of 21 C.F.R. § 312.21(a) (or equivalent regulation in countries other than the United States).

1.111 "***Phase II Clinical Trial***" means a Clinical Trial that would satisfy the requirements of 21 C.F.R. § 312.21(b) (or equivalent regulation in countries other than the United States). [***].

1.112 "***Phase III Clinical Trial***" means a controlled or uncontrolled human Clinical Trial of a product that would satisfy the requirements of 21 C.F.R. § 312.21(c) (or equivalent regulation in countries other than the United States). [***].

1.113 "***Pivotal Clinical Trial***" means [***].

1.114 "***Precision***" has the meaning set forth in the Preamble.

1.115 "***Precision Arising IP***" means, individually or collectively, Precision Sole IP and Precision's share in Joint IP.

1.116 "***Precision Arising Platform IP***" means any and all Precision Arising IP that is not Precision Arising Product IP.

1.117 "***Precision Arising Product IP***" means Precision Arising IP that is necessary or reasonably useful for the Exploitation of the Licensed Product.

1.118 "***Precision Background IP***" means any and all (a) Patents Controlled by Precision or its Affiliates at any time during the Term that Cover a Licensed Product, or use of the Licensed ARCUS Nuclease to make a Licensed Product, or any Know-How in the following clause (b); (b) Know-How Controlled by Precision or its Affiliates (i) as of the Effective Date or (ii) during the Term, in each case (i) and (ii) that is necessary or reasonably useful for the Exploitation of a Licensed Product in the Licensed Field; and (c) [***].

1.119 "***Precision Background Platform IP***" means any and all Precision Background IP that is not Precision Background Product IP, including ARCUS Technology.

1.120 "***Precision Background Product IP***" means any and all Precision Background IP that is directly and particularly related to the Exploitation of the Licensed Product in the Licensed Field.

1.121 "***Precision Common Stock***" means Precision's common stock, par value $0.000005 per share.

1.122 "***Precision-Imugene JSC***" means the joint steering committee existing under Section 2.2 of the Precision-Imugene License Agreement.

1.123 "***Precision-Imugene License Agreement***" means the License Agreement between Imugene and Precision, dated August 15, 2023, as amended from time to time.

1.124 "***Precision Indemnitee***" has the meaning set forth in Section 11.1.2.

1.125 "***Precision Patent***" means any Patent included in the Precision Technology.

1.126 "***Precision Platform IP***" means, individually or collectively, the Precision Background Platform IP and the Precision Arising Platform IP.

1.127 "***Precision Product IP***" means, individually or collectively, the Precision Background Product IP and the Precision Arising Product IP.

1.128 "***Precision Product Patent***" means [***].

1.129 "***Precision Product-Specific Claim***" means [***].

1.130 "***Precision Share Price***" means the greater of (a) two hundred percent (200%) of the VWAP of the Precision Common Stock calculated during the applicable period specified in this Agreement and (b) the Minimum Price (for clarity, the Precision Share Price applicable to any Precision Stock Issuance shall not be less than the Minimum Price); provided, however, that if the Precision Common Stock is no longer listed on Nasdaq or another securities exchange, the Precision Share Price shall be equal to two hundred percent (200%) of the fair market value of a share of Precision Common Stock, as reasonably determined in good faith by the Precision Board of Directors or any successor thereof.

1.131 "***Precision Shares***" refers to the shares of Precision Common Stock issued by Precision to TGTX in accordance with, and subject to the terms and conditions specified in, this Agreement.

1.132 "***Precision Sole IP***" has the meaning set forth in Section 9.1.2(b).

1.133 "***Precision Stock Issuances***" has the meaning set forth in Section 8.2.1(d).

1.134 "***Precision Stock Payments***" has the meaning set forth in Section 8.2.1(d).

1.135 "***Precision Technology***" means, individually or collectively, the Precision Background IP and the Precision Arising IP.

1.136 "***Pricing and Reimbursement Approval***" means, with respect to a particular Licensed Product and a particular country or regulatory jurisdiction, any approval, agreement, determination or decision of any Regulatory Authority establishing the price or level of reimbursement for such Licensed Product, as required in a given country or jurisdiction prior to sale of such Licensed Product in such country or jurisdiction at the relevant time.

1.137 "***Prosecute and Maintain***" or "***Prosecution and Maintenance***" with respect to a particular Patent, means (a) all activities associated with the preparation, filing, prosecution and maintenance of such Patent, and (b) all Patent Defense Matters with respect to such Patent.

1.138 "***Prosecuting Party***" has the meaning set forth in Section 9.2.2.

1.139 "***Proxyholder***" has the meaning set forth in Section 8.2.7.

1.140 "***Publication***" has the meaning set forth in Section 12.3.

1.141 "***Receiving Party***" has the meaning set forth in Section 12.1.2.

1.142 "***Regulatory Approvals***" means, collectively, any and all approvals (including supplements, amendments, pre- and post-approvals, Pricing and Reimbursement Approvals), licenses, registrations, permits, notifications, and authorizations (including marketing and labeling authorizations) or waivers of any Regulatory Authority that are necessary for the testing or Exploitation of a pharmaceutical product (including the Licensed Product) in any country or jurisdiction, including Pricing and Reimbursement Approval, as applicable.

1.143 "***Regulatory Authority***" means any Governmental Authority that has responsibility in its applicable jurisdiction over the Exploitation of pharmaceutical products (including the Licensed Product) in any country or jurisdiction. For countries or jurisdictions where governmental approval is required for pricing or reimbursement for a pharmaceutical product (including the Licensed Product) to be reimbursed by national health insurance (or its local equivalent), Regulatory Authority includes any Governmental Authority whose review or approval of pricing or reimbursement of such product is required.

1.144 "***Regulatory Filings***" means, collectively, any and all applications, filings, submissions, approvals (including supplements, amendments, pre- and post-approvals, pricing and reimbursement approvals), licenses, registrations, permits, notifications, and authorizations (including marketing and labeling authorizations), non-clinical and clinical study authorization applications or notifications (including all supporting files, writings, data, studies and reports) or waivers with respect to the Commercialization of a pharmaceutical product (including Licensed Products) made to or received from any Regulatory Authority or research ethics committee in a given country or jurisdiction, including INDs and BLAs.

1.145 "***Relevant Factors***" means all factors that are relevant to the Development, Manufacture or Commercialization of a product, including its safety and efficacy, product profile, cost to develop, cost and availability of supply, the time required to complete Development, the competitiveness of the marketplace (including the proprietary position and anticipated market share of the product), the patent position with respect to such product (including the ability to obtain or enforce, or have obtained or enforced, such patent rights), the third-party patent landscape relevant to the product, the regulatory structure involved, the likelihood of regulatory approval, the anticipated or actual profitability of the applicable product and other technical, commercial, legal, scientific, regulatory and medical considerations, in all cases, on a country-by-country basis, including, without limitation, decisions and actions relating to the sequence and advisability of initiating Development in [***], and including, with respect to TGTX's efforts [***].

1.146 "***Representatives***" has the meaning set forth in Section 9.1.6.

1.147 "***Research***" means, with respect to a Licensed Product, or other product or therapy, any and all activities directed to the discovery, identification, screening, testing, assessment and optimization of such Licensed Product, or other product or therapy.

1.148 "***Restricted Period***" has the meaning set forth in Section 8.2.7.

1.149 "***Review Period***" has the meaning set forth in Section 12.3.

1.150 "***Right of Reference***" means the right and authority to rely upon, and otherwise use, a study or an investigation for the purpose of filing, and conducting a Clinical Trial under, an IND, or obtaining approval of a Marketing Authorization or other Regulatory Approval, including the ability to make available the underlying raw data from the study or investigation for audit by the applicable Regulatory Authority in such country or other jurisdiction, if necessary.

1.151 "***Royalty***" has the meaning set forth in Section 8.6.2.

1.152 "***Royalty Term***" has the meaning set forth in Section 8.6.1.

1.153 "***Rule 144***" has the meaning set forth in Section 8.2.4.

1.154 [***].

1.155 "***Securities Act***" has the meaning set forth in Section 8.2.2(a).

1.156 "***Selling Party***" means TGTX, its Affiliates or its or their Sublicensees.

1.157 "***Servier***" has the meaning set forth in the definition of Servier Agreement.

1.158 "***Servier Agreement***" means the Program Purchase Agreement entered into by Precision and Les Laboratoires Servier and Institut de Recherches Internationales Servier (collectively, "***Servier***") on April 9, 2021, as amended from time to time.

1.159 "***Standstill Provisions***" has the meaning set forth in Section 8.2.8.

1.160 "***Stockholder Approval***" means such approval as may be required by the applicable rules and regulations of Nasdaq (or any successor entity) or any other applicable exchange from the stockholders of Precision with respect to issuance of Precision Shares.

1.161 "***Stockholder Matter***" has the meaning set forth in Section 8.2.7.

1.162 "***Sublicensee***" means a Third Party that is granted a license or sublicense to Develop, Manufacture or Commercialize a Licensed Product in the Licensed Field in the Territory, beyond the mere right to purchase such Licensed Product from TGTX and its Affiliates, and excludes TGTX's and its Affiliates' Distributors.

1.163 "***Term***" has the meaning set forth in Section 13.1.

1.164 "***Terminated Product***" has the meaning set forth in Section 13.3.

1.165 "***Territory***" means worldwide.

1.166 "***TGTX***" has the meaning set forth in the Preamble.

1.167 "***TGTX Arising IP***" means, individually or collectively, TGTX Sole IP and TGTX's share in Joint IP.

1.168 "***TGTX Background IP***" means any and all Patents and Know-How that TGTX or any of its Affiliates Controls as of the Effective Date, or discovers, creates or acquires outside the scope of its performance of activities under this Agreement; in each case, that is necessary or reasonably useful for the Exploitation of a Licensed Product.

1.169 "***TGTX Indemnitee***" has the meaning set forth in Section 11.1.1.

1.170 "***TGTX Parent***" has the meaning set forth in the Preamble.

1.171 "***TGTX Parent Common Stock***" means TGTX Parent's common stock, par value $0.001 per share.

1.172 "***TGTX Parent Consideration Shares***" refers to the shares of TGTX Parent Common Stock issued by TGTX Parent to Precision in accordance with, and subject to the terms and conditions specified in, this Agreement.

1.173 "***TGTX Patent***" means any Patent constituting or claiming any TGTX Background IP or TGTX Sole IP.

1.174 "***TGTX Promotional Materials***" has the meaning set forth in Section 5.1.3(a).

1.175 "***TGTX Sole IP***" has the meaning set forth in Section 9.1.2.

1.176 "***TGTX Technology***" means TGTX Background IP and TGTX Sole IP.

1.177 [***].

1.178 "***Third Party***" means any Person other than TGTX or Precision (or their respective Affiliates).

1.179 "***Trading Day***" means a day on which the Nasdaq is open for trading, *provided* that if no closing price or daily trading volume is reported in respect of the relevant shares on the Nasdaq for one (1) or more consecutive trading days, such day or days will be disregarded in any relevant calculation and shall be deemed not to have existed when ascertaining any period of trading days.

1.180 "***Transfer***" has the meaning set forth in Section 8.2.6.

1.181 [***].

1.182 "***Upfront Precision Stock Issuance***" has the meaning set forth in Section 8.2.1(a).

1.183 "***Upfront Precision Stock Payment***" has the meaning set forth in Section 8.2.1(a).

1.184 "***U.S.***" means the United States of America and its territories and possessions.

1.185 "***U.S. GAAP***" has the meaning set forth in the definition of Net Sales.

1.186 "***Valid Claim***" means, with respect to a given Licensed Product, a claim that Covers (a) [***], (b) [***] or (c) [***], in each case (a) - (c) contained in (y) an issued and unexpired Patent that has not been revoked or held unenforceable, unpatentable or invalid by a decision of a court or other governmental agency of competent jurisdiction that is not appealable or has not been appealed within the time allowed for appeal; or (z) a pending patent application that has not been cancelled, withdrawn or abandoned or finally rejected by an administrative agency action from which no appeal can be taken and that has been pending for no longer than [***].

1.187 "***VWAP***" means the arithmetic average of the daily volume-weighted average per share price of the relevant shares of common stock on Nasdaq (or, if such shares are no longer listed on Nasdaq, the applicable securities exchange, if any, on which they are then listed) during the Trading Day (subject to appropriate adjustments being made in respect of any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split, reconstruction, consolidation, division, reclassification of such shares into a lesser or greater number of securities or other similar transaction, other than a buyback or capital reduction, during the relevant period or subsequent thereto and prior to the issuance of the relevant shares of common stock, and in respect of certain other market circumstances to adjust for market anomalies, such as suspensions of trading).

1.188 "***Withholding Tax Action***" has the meaning set forth in Section 8.11.4.

ARTICLE 2

GOVERNANCE AND JOINT STEERING COMMITTEE

2.1 **Relationship Managers**. No later than [***] after the Effective Date, each Party will appoint an individual to act as its relationship manager under this Agreement as soon as practicable after the Effective Date (each a "***Relationship Manager***"). The Relationship Managers will: (a) serve as the primary points of contact between the Parties for the purpose of providing the other Party with information on the progress of a Party's activities under this Agreement; (b) be responsible for facilitating the flow of information and otherwise promoting communication, coordination, and collaboration between the Parties, and; (c) facilitate the prompt resolution of any disputes; and (d) attend JSC meetings, in each case, as a non-voting member. A Relationship Manager may also bring any matter to the attention of the JSC if such Relationship Manager reasonably believes that such matter warrants such attention. Each Party will use reasonable efforts to keep an appropriate level of continuity but may replace its Relationship Manager at any time upon written notice to the other Party. [***].

2.2 **Coordination with Imugene**. Precision will use Commercially Reasonable Efforts to facilitate TGTX's entry into a cooperation agreement with Imugene, in form reasonably acceptable to TGTX, as promptly as possible following the Effective Date (but in any event no later than [***] following the Effective Date) to enable TGTX to Develop, Manufacture and Commercialize the Licensed Product in accordance with the terms of this Agreement, and providing for, among other things, information sharing (including, without limitation, with respect to all chemistry, manufacturing, and controls (CMC) data), regulatory coordination, promotional materials, compliance policies, complaints or inquiries, and coordination of prosecution and maintenance of Patents, in each case, between TGTX and Imugene relating to the Licensed Product. [***].

2.3 **Joint Steering Committee**.

2.3.1 **Establishment; Purpose of JSC**. No later than [***] after the Effective Date, the Parties will establish a joint steering committee (the "***JSC***") to monitor the Exploitation of the Licensed Product in the Licensed Field in the Territory. The JSC will be composed of an equal number of representatives from each Party, and a minimum of three (3) representatives of each Party, and who have the appropriate and direct knowledge and expertise and requisite decision-making authority. Each Party may replace any of its representatives on the JSC and appoint a person to fill the vacancy arising from each such replacement. A Party that replaces a representative will notify the other Party at least [***] prior to the next scheduled meeting of the JSC. Both Parties will use reasonable efforts to keep an appropriate level of continuity in representation. Representatives may be represented at any meeting by another person designated by the absent representative. Each Party's representatives on the JSC will inform and coordinate within their respective organization to enable each Party to fulfill its obligations as agreed upon between the Parties under this Agreement, including within the time frames set forth hereunder.

2.3.2 **Meeting Agendas**. Each Party will disclose to the other Party the proposed agenda items along with appropriate information at least [***] in advance of each meeting of the JSC; *provided* that under exigent circumstances requiring JSC input, a Party may provide its agenda items to the other Party within a shorter period of time in advance of a meeting, or may propose that there not be a specific agenda for a particular meeting, so long as such other Party consents to such later addition of such agenda items or the absence of a specific agenda for such JSC meeting.

2.3.3 **Meetings**. The JSC will hold meetings at such times as it elects to do so, but will meet no less frequently than quarterly, unless otherwise agreed by the Parties. The JSC may meet in person or by means of teleconference, Internet conference, videoconference, or other similar communication method; *provided* that the Parties will use reasonable efforts for at least one meeting each Calendar Year to be conducted in person at a location selected alternatively by Precision and TGTX or such other location as the Parties may agree. Each Party will be responsible for all of its own costs and expenses of participating in any JSC meeting. The Relationship Managers will jointly prepare and circulate minutes for each JSC meeting within [***] after each such meeting and will ensure that such minutes are reviewed and approved by their respective companies within [***] thereafter.

2.3.4 **JSC Responsibilities**. The responsibilities of the JSC will be to:

(a) provide a forum for the discussion of the Parties' activities and the flow of information contemplated under this Agreement;

(b) review and discuss the Development of each Licensed Product, including clinical trial protocols, monitoring plans, and data disclosure plans included with each such protocol;

(c) [***], review and discuss any clinical trial protocols, monitoring plans, and data disclosure plans included with each such protocol with respect to each Licensed Product;

(d) review and discuss matters that may have a material adverse impact upon the regulatory status of the Licensed Product, as described in Section 4.1.2(f);

(e) review and discuss Medical Affairs Plans and any updates thereto for any Licensed Product, as described in Section 4.6;

(f) review and discuss the Commercialization of the Licensed Product;

(g) oversee the implementation of activities to be performed under any other written agreement between the Parties with respect to the subject matter hereof; and

(h) perform such other functions as expressly set forth in this Agreement or allocated to the JSC by the Parties' written agreement.

2.4 **Non-Member Attendance**. Each Party may from time to time invite a reasonable number of participants, in addition to its representatives (which may include legal counsel), to attend a meeting of the JSC (in a non-voting capacity), if such participants have expertise that is relevant to the planned agenda for such JSC meeting; *provided* that if either Party intends to have any Third Party (including any consultant) attend such a meeting, then such Party will provide prior written notice to the other Party reasonably in advance of such meeting and will ensure that such Third Party is bound by obligations of confidentiality and non-use at least as stringent as those set forth in Article 12 [***].

2.5 **Decision-Making**.

2.5.1 **General Process**. The JSC will only have the advisory powers expressly assigned to it in this Article 2 and elsewhere in this Agreement and will not have the authority to: (a) modify or amend the terms of this Agreement; or (b) waive either Party's compliance with the terms of this Agreement. [***]. No action taken at any meeting of the JSC will be effective unless there is a quorum at such meeting, and at all such meetings, a quorum will be reached if two voting representatives of each Party are present or participating in such meeting. Except as otherwise expressly set forth in this Agreement, the phrases "determine," "designate," "confirm," "approve," or "determine whether to approve" by the JSC and similar phrases used in this Agreement will mean approval in accordance with this Section 2.5, including the escalation and tie-breaking provisions herein. For the avoidance of doubt, matters that are specified in Section 2.3.4 to be reviewed and discussed (as opposed to approved) do not require any agreement or decision by either Party and are not subject to the voting and decision-making procedures set forth in this Section 2.5.

2.5.2 **Decisions of the JSC**. The JSC will use good faith efforts, in compliance with this Section 2.5.2, to promptly resolve any such matter for which it has authority. If, after the use of good faith efforts, the JSC is unable to resolve any such matter that is within the scope of the JSC's authority or any other disagreement between the Parties that may be referred to the JSC, in each case, within a period of [***], then a Party may refer such matter for resolution in accordance with Section 2.6.1.

2.6 **Resolution of JSC Disputes**.

2.6.1 **Referral to Executive Officers**. If a Party makes an election under Section 2.5.2 to refer a matter on which the JSC cannot reach a consensus decision for resolution by the Executive Officers, then the JSC will submit in writing the respective positions of the Parties to their respective Executive Officers. The Executive Officers will use good faith efforts to resolve any such matter so referred to them as soon as practicable, and any final decision that the Executive Officers agree to in writing will be conclusive and binding on the Parties.

2.6.2 **No Change; Status Quo**. If the Executive Officers are unable to reach agreement on any such matter referred to them within [***] after such matter is so referred (or such longer period as the Executive Officers may agree upon), then neither Party will have final decision-making authority over approval of such matter and all such matters must be decided by unanimous agreement of the Parties in order to take any action or adopt any change from the then-current *status quo*, as applicable, *provided* that TGTX will have final decision-making authority with respect to [***].

2.6.3 **Limitations on Decision-Making**. Notwithstanding any provision to the contrary set forth in this Agreement, without the other Party's prior written consent, neither Party (in the exercise of a Party's final decision-making authority), the JSC, nor a Party's Executive Officer, in each case, may make a decision that could reasonably be expected to [***].

2.7 **Discontinuation of JSC**. The JSC will continue to exist until the first to occur of (a) [***] or (b) [***]. Once the JSC is disbanded, the JSC will have no further obligations under this Agreement and, thereafter, the Relationship Managers will be the points of contact for the exchange of information between the Parties under this Agreement.

ARTICLE 3

DEVELOPMENT MATTERS

3.1 **Licensed Product.**

3.1.1 **Conduct of the Parties**. The Parties' mutual objective is to permit TGTX, pursuant to and in accordance with the terms of this Agreement, to Develop the Licensed Product(s) in the Licensed Field while not taking any action that would be reasonably likely to materially adversely affect Development of the Licensed Product outside the Licensed Field. Each Party shall conduct itself and its activities hereunder consistent with that understanding, consistent with sound and ethical business and scientific practices. In all matters related to such activities (including, with respect to Precision, its actions under the Precision-Imugene License Agreement), the Parties shall strive to balance, as best as reasonably possible, their respective legitimate interests and concerns and to realize the economic potential of the Licensed Product(s) in the Licensed Field and outside the Licensed Field.

3.1.2 **Development Responsibility; Diligence Obligations**. Subject to the terms of this Agreement, TGTX shall be responsible for, at its sole cost and expense, all Development of the Licensed Product in the Licensed Field in the Territory, including all Clinical Trials and activities that are necessary for or otherwise support obtaining and maintaining Regulatory Approvals in the Licensed Field in the Territory. TGTX shall use Commercially Reasonable Efforts to Develop and seek and obtain Regulatory Approval for the Licensed Product in the Licensed Field in the Territory [***], all in accordance with all Applicable Laws. [***] (such date, as may be extend by clause (a) or (b), the "***Initiation Deadline***").

3.1.3 **Standard of Conduct**. TGTX will perform, and will cause its Affiliates, Sublicensees, and subcontractors to perform, all Development activities for the Licensed Product in a timely, good scientific manner, in accordance with GLP, cGMP, and cGCP, as applicable, and in compliance with Applicable Laws and Commercially Reasonable Efforts. In addition, TGTX will conduct its obligations with respect to any Clinical Trial with the study design set forth in the applicable protocol, each as may be amended from time to time.

3.2 **Development Records**.

3.2.1 **Generally**. TGTX will, and will cause its Affiliates, Sublicensees, and subcontractors to, maintain reasonably complete, current, and accurate records of all Development activities conducted by or on behalf of TGTX, and its Affiliates, Sublicensees, and subcontractors, respectively, pursuant to this Agreement and all data and other information resulting from such activities consistent with its usual practices, in validated computer systems that are materially in compliance with 21 C.F.R. §11 and in accordance with Applicable Laws ("***Development Records***"). Such Development Records will fully and properly reflect all work done and results achieved in the performance of the Development activities for the Licensed Products in good scientific manner appropriate for regulatory and patent purposes.

3.2.2 **Additional Requirements**. TGTX will maintain all Development Records related to the Licensed Product for a period of [***] after the end of the Term. TGTX will document all non-clinical and preclinical studies and Clinical Trials of the Licensed Product in formal written study reports in accordance with GLP, cGMP, and cGCP, as applicable, and in compliance with Applicable Law.

(a) Upon Precision's reasonable request, not more frequently than [***] during which TGTX or its Affiliates, Sublicensees, or subcontractors are performing or having performed Development activities for any Licensed Product, TGTX will, and will cause its Affiliates, Sublicensees, and subcontractors to, allow Precision to access, review, and copy such records (including access to relevant databases). Precision will have the right to use the data and results generated by or on behalf of TGTX and its Affiliates, Sublicensees, and subcontractors hereunder to Exploit any Licensed Product outside of the Licensed Field in the Territory. TGTX will ensure that all records or other documents that it transmits to Precision electronically under this Agreement are transmitted over secure systems that include adequate encryption safeguards to prevent unauthorized access and maintain data security.

(b) Upon TGTX's reasonable request during the Term, not more frequently than [***] during which Precision or its Affiliates, Sublicensees, or subcontractors are performing or having performed development activities for any Licensed Product, Precision will allow TGTX to access, review, and copy all data and other information resulting from such activities (including access to relevant databases) that are Controlled by Precision. TGTX will have the right to use such data and information hereunder to Exploit any Licensed Product in the Licensed Field in the Territory. Precision will ensure that all data and other information that it transmits to TGTX electronically under this Agreement are transmitted over secure systems that include adequate encryption safeguards to prevent unauthorized access and maintain data security.

3.3 **Data Exchange and Use**. In addition to its adverse event and safety data reporting obligations set forth in Section 4.4, each Party will promptly provide the other Party, through the JSC (or, based on the time sensitivity or urgency of such data and results, directly between representatives of the Parties outside of the JSC), with copies of all data and results and all supporting documentation (*e.g.*, protocols, Investigator's Brochures, case report forms, analysis plans, and all in English language) (collectively, "***Clinical Data and Documentation***") (a) Controlled by such Party or its Affiliates (or Sublicensees, in the case of TGTX) (b) owned by, or licensed to, Precision's licensees, to the extent Controlled by Precision, in each case, (a) or (b), that are generated by or on behalf of such Party or its Affiliates (or its licensees or Sublicensees, as applicable) in the Development of each Licensed Product, including in the Development of the existing Licensed Product under the Precision-Imugene License Agreement. TGTX will have the right to use and reference such data and results provided by Precision for the purpose of performing Development activities under this Agreement, obtaining, supporting, and maintaining Regulatory Approvals and any Reimbursement Approval, as applicable, of Licensed Products in the Licensed Field in the Territory, without additional consideration. Precision and its Affiliates and licensees will have the right to use and reference such data and results provided by TGTX for the purpose of Developing the Licensed Product (but, during the Term, only outside the Licensed Field) or any other products based on ARCUS Technology, and obtaining, supporting, and maintaining Regulatory Approvals or any Reimbursement Approvals, as applicable, of any such product, without additional consideration. For clarity, Precision shall not clinically Develop the Licensed Product in the Licensed Field in the Territory during the Term. [***].

3.4 **Development Reports**. On an annual basis, during any period in which TGTX is performing, or having performed, Development activities for the Licensed Product, TGTX will provide Precision, at TGTX's sole cost and expense, with reasonably detailed written reports summarizing the Development activities performed during the period since the preceding report, the Development activities in process, and the future activities that TGTX or its Sublicensees or subcontractors expect to initiate. Without limiting the foregoing, such reports will contain sufficient detail to enable Precision to assess TGTX's compliance with its Development diligence obligations set forth in this Article 3. TGTX will promptly respond to Precision's reasonable requests from time to time for additional information regarding significant Development activities for the Licensed Product performed by or on behalf of TGTX or its Affiliates, Sublicensees, or subcontractors.

ARTICLE 4

REGULATORY MATTERS; MEDICAL AFFAIRS

4.1 **Regulatory Responsibilities**.

4.1.1 **Licensed Product Outside the Licensed Field**. As between Precision and TGTX, Precision (or its licensees) shall be solely responsible for any and all regulatory activities with respect to the Licensed Product outside the Licensed Field, including filing of all Regulatory Filings for the Licensed Product, maintenance of all Regulatory Approvals, any reports or submissions required to be made to any non-governmental Third Party payors, and any and all regulatory matters arising after obtaining Regulatory Approval, including post-marketing inquiries and safety surveillance activities. Precision shall keep TGTX reasonably and promptly apprised of such activities.

4.1.2 **Licensed Product in the Licensed Field**.

(a) As between Precision and TGTX, subject to the terms of this Agreement, TGTX shall be responsible for regulatory activities with respect to the Licensed Product in the Licensed Field in the Territory, and shall use Commercially Reasonable Efforts to prepare any and all Regulatory Filings for all indications in the Licensed Field. TGTX shall provide the JSC with drafts of all chemistry, manufacturing, and controls (CMC) and quality-related filings for Licensed Products in the Licensed Field in the Territory at least [***] prior to submission to a Regulatory Authority to allow the JSC a reasonable opportunity to review and comment on such filings. TGTX shall consider the JSC's comments on such filings in good faith but has no obligation to accept any comments of the JSC. TGTX shall submit all Regulatory Filings for Licensed Products in the Licensed Field in the Territory in the name of TGTX or its Affiliate or designee, and all resulting Regulatory Approvals will be owned by, and held in the name of, TGTX or its Affiliate or designee.

(b) To the extent possible, and as soon as reasonably possible, each Party shall provide to the JSC reasonable written notice of all meetings and conference telephone calls with any Regulatory Authority in which matters that would be expected to relate to the Licensed Product will be discussed.

(c) Each Party shall notify the JSC within [***] after it receives information about the initiation of any investigation or inquiry by any Regulatory Authority concerning the Development, Manufacture or Commercialization of the Licensed Product to the extent such investigation or inquiry would be reasonably likely to adversely affect the other Party. Precision shall keep TGTX reasonably and promptly informed of any such information it receives from Imugene.

(d) If a Regulatory Authority desires to conduct an inspection or audit with regard to the Licensed Product or TGTX's facility or a facility under contract with TGTX or its Affiliate with respect to the activities relevant to this Agreement, TGTX shall permit and cooperate with such inspection or audit, and shall cause the contract facility to permit and cooperate with such Regulatory Authority during such inspection or audit. TGTX shall conform its activities under this Agreement to any commitments made in such a response, except to the extent that TGTX believes in good faith that such commitments violate Applicable Laws.

(e) If any Regulatory Authority takes or gives notice of its intent to take any regulatory action with respect to any activity of either Party, its Affiliate, or licensee (or Sublicensee, in the case of TGTX) relating to the Licensed Product, then such Party will notify the JSC of such contact, inspection, or notice or action within [***] after receipt of such notice (or, if later, within [***] of such Party becoming aware of such action). Such Party will have the final decision-making authority with respect to [***]. The costs and expenses of any such regulatory action will be borne by such Party. Precision shall keep TGTX reasonably and promptly informed of any such notice received by the Precision-Imugene JSC.

(f) If either Party believes that the other Party, its Affiliate, or licensee (or Sublicensee, in the case of TGTX) is taking or intends to take any action with respect to the Licensed Product that could have a material adverse impact upon the regulatory status of the Licensed Product, [***]. Precision shall keep TGTX reasonably and promptly informed of any such matter brought to the attention of the Precision-Imugene JSC.

4.1.3 **ARCUS Nuclease Matters**. Notwithstanding anything to the contrary and without limiting any other right of Precision in this Article 4, Precision shall have the right, prior to BLA approval for the Licensed Product, to have its employees attend each INTERACT meeting or pre-IND submission meeting, the end of the Phase II Clinical Trial meeting for the Licensed Product, and any other meeting with the FDA or EMA if such other meeting has any item on the agenda specifically directed to the manufacturing, quality, safety (including non-clinical safety related to production of ARCUS Nucleases) or delivery of ARCUS Nucleases or ARCUS Technology for the portion of the meeting specifically directed to such topics (collectively, "***ARCUS Regulatory Matters***"). Prior to BLA approval for the Licensed Product, TGTX will provide drafts of its communications with the FDA and EMA (including with respect to CMC-related matters) to the extent they relate to ARCUS Regulatory Matters to Precision for review and comment, and will consider Precision's comments in good faith and not unreasonably reject any such comments, before submitting such communications to the FDA or EMA. Following BLA approval for the Licensed Product, TGTX shall provide Precision notice regarding any communications from Regulatory Authorities regarding ARCUS Regulatory Matters.

4.2 **Regulatory Costs**. TGTX shall bear all costs and expenses it incurs to conduct all regulatory activities under this Agreement.

4.3 **Right of Reference**. Each Party hereby grants, and shall cause its Affiliates and require its licensees (and Sublicensees, in the case of TGTX) to grant, at no cost, to the other Party, its Affiliates and any of their respective licensees (in the case of Precision) or Sublicensees (in the case of TGTX) a Right of Reference and right to use and reference (which, for the purposes of Section 13.7, the Parties agree is a license) any data and Regulatory Filings Controlled by the granting Party, its Affiliates, or its licensees (or Sublicensees, in the case of TGTX) that relates to the Licensed Product that the other Party reasonably believes may be necessary or useful to the Development, Manufacture or Commercialization of the Licensed Product in such other Party's respective field (i.e., in the Licensed Field, in the case of TGTX, or outside the Licensed Field, in the case of Precision), and the granting Party will provide, and shall cause its Affiliates and require its licensees (in the case of Precision) and Sublicensees (in the case of TGTX) to provide, a signed statement to the foregoing effect, as reasonably requested by the other Party. [***].

4.4 **Adverse Event Reporting; PV Agreement.**

4.4.1 **Generally**. As between the Parties, TGTX shall be responsible for the timely reporting of all relevant adverse drug reactions/experiences, product quality, product complaints and safety data relating to Licensed Products in the Licensed Field to the appropriate Regulatory Authorities in the Territory, in each case in accordance with Applicable Laws of the relevant countries and Regulatory Authorities. [***]. The PV Agreement shall include terms that comply with ICH guidelines, taking into account the roles of Imugene as data holder and TGTX as data generator, including timely reporting of all relevant adverse drug reactions/experiences, product quality, product complaints and safety data relating to Licensed Products to the appropriate Regulatory Authorities in the Territory in accordance with Applicable Laws of the relevant countries and Regulatory Authorities. In addition, the PV Agreement shall include provisions (a) providing detailed procedures regarding the maintenance of core safety information and the exchange of safety data relating to the Licensed Product or the Licensed ARCUS Nuclease worldwide within appropriate timeframes and in an appropriate format to enable each Party to meet both expedited and periodic regulatory reporting requirements; and (b) ensuring compliance with the reporting requirements of all applicable Regulatory Authorities on a worldwide basis for the reporting of safety data in accordance with standards stipulated in the ICH guidelines, and all applicable regulatory and legal requirements regarding the management of safety data. Pursuant to the PV Agreement, each party thereof shall be solely responsible for all costs and expenses it incurs to conduct its pharmacovigilance responsibilities. [***].

4.4.2 **Right to Audit for Licensed Product**. Each Party shall have the right to perform audits of the other Party's pharmacovigilance activities relating to the Parties' activities in relation to the Licensed Product under the terms of this Agreement including compliance by the other Party with Applicable Laws. The frequency of such audits will be no more than [***] during the Term; *provided* that such audits may be more frequent if, in the auditing Party's sole discretion, more frequent audits are necessary by a risk-based approach, and except in 'for cause' situations where, in the event of a serious or potentially serious issue, additional audits may be conducted. The notification of one Party's intent to conduct such an audit will be provided in writing to the other Party within a reasonable time period in advance, based upon the particular circumstances of the situation.

4.5 **Product Withdrawals and Recalls**. In the event that (a) an event, incident, or circumstance has occurred which may result in the need for a recall or other removal of the Licensed Product or any lot or lots thereof from the market in the Licensed Field in the Territory; (b) any Regulatory Authority in the Territory threatens or initiates any action to remove the Licensed Product from the market in the Licensed Field in the Territory; or (c) any Regulatory Authority in the Territory requires distribution of a "Dear Doctor" letter or its equivalent, regarding use of the Licensed Product in the Licensed Field in the Territory, TGTX shall promptly advise Precision in writing with respect thereto, and shall provide to Precision copies of all relevant correspondence, notices, and any other related documents. In the event that (x) an event, incident, or circumstance has occurred which may result in the need for a recall or other removal of any Licensed Product or any lot or lots thereof from the market outside the Licensed Field in the Territory; (y) any Regulatory Authority in the Territory threatens or initiates any action to remove any Licensed Product from the market outside the Licensed Field in the Territory; or (z) any Regulatory Authority in the Territory requires distribution of a "Dear Doctor" letter or its equivalent, regarding use of the Licensed Product outside the Licensed Field in the Territory, Precision shall promptly (after it becomes aware of any of the events in (x) – (z)) advise TGTX, and shall require its licensees to promptly advise Precision, in writing with respect thereto, and shall provide to TGTX, and shall require its licensees to provide to Precision, copies of all relevant correspondence, notices, and any other related documents in its, or its licensee's, as applicable, possession. Unless otherwise agreed by the Parties, TGTX shall be responsible for conducting a recall of the Licensed Product in the Licensed Field. TGTX will have the right to make the final determination whether to voluntarily implement any such recall, market suspension, or market withdrawal of the Licensed Product in the Licensed Field in the Territory. Each Party will cooperate with the other Party in the performance of any recall or withdrawal.

4.6 **Medical Affairs** No later than [***] prior to the anticipated date of performance of Medical Affairs activities for the Licensed Product in the Territory, TGTX will prepare an initial draft of each Medical Affairs Plan for the Licensed Product and provide such initial draft to the JSC to review and discuss. The Medical Affairs Plan will contain a high-level summary of the major Medical Affairs activities to be undertaken by TGTX for the Licensed Product in the Licensed Field in the Territory and the estimated timelines for performing such activities. Thereafter, from time to time, but at least annually, TGTX will propose updates to the Medical Affairs Plan for the Licensed Product in the Licensed Field in the Territory to reflect changes in such plan, including to account for relevant facts and circumstances that may influence such plan and the Medical Affairs activities set forth therein and provide each such update to the JSC to review and discuss. For each Calendar Quarter in which any Medical Affairs are conducted by or on behalf of TGTX or its Affiliates or Sublicensees for the Licensed Product in the Licensed Field in the Territory, TGTX will provide updates on Medical Affairs activities at each meeting of the JSC. The Parties recognize that each Party may benefit from the coordination of certain Medical Affairs activities for the Licensed Product(s) inside and outside of the Licensed Field. Accordingly, the Parties will coordinate such activities through the JSC where appropriate.

ARTICLE 5

COMMERCIALIZATION

5.1 **Licensed Product**.

5.1.1 **Principles of Commercialization**. The Parties intend for TGTX to use Commercially Reasonable Efforts to Commercialize the Licensed Product in the Licensed Field in the Territory, following Regulatory Approval thereof, as set forth in this Section 5.1. Each Party shall appoint a representative to be such Party's single point of contact to facilitate information flow between the Parties relating to each Party's experience and relationships in the Licensed Field (in the case of TGTX) and outside the Licensed Field (in the case of Precision). Each Party shall first address any communications relating to Commercialization by the other Party to such representatives unless otherwise agreed to by the Parties on a case-by-case basis. Such representatives shall, without limitation, coordinate direct involvement or meetings with subject matter experts within each Party's internal organization and/or its field account management organization. Notwithstanding the foregoing, neither TGTX's nor Precision's representative shall be required to provide details relating to any customer specific transaction or agreement.

5.1.2 **Commercialization Activities**. TGTX shall (a) use Commercially Reasonable Efforts to Commercialize the Licensed Product in the Licensed Field following Regulatory Approval thereof in the Licensed Field in the Territory [***]; and (b) use Commercially Reasonable Efforts to perform other activities not otherwise identified herein but which are required by Regulatory Authorities to Commercialize the Licensed Product in any indication in the Licensed Field for which Regulatory Approval has been obtained in the Territory.

5.1.3 **Advertising and Promotional Materials**.

(a) **TGTX Promotional Materials**. TGTX will be responsible for development of all advertising and promotional materials, programs and initiatives related to the use of the Licensed Product in the Licensed Field in the Territory, including medical education, symposia, opinion leader development, peer-to-peer development, publications, journal ads, and all other written communications that describe the features or benefits of the Licensed Product, in each case in the Licensed Field in the Territory (the "***TGTX Promotional Materials***"). All TGTX Promotional Materials shall be prepared in accordance with Applicable Law, TGTX's policies for compliance with Applicable Laws, industry guidelines relating to promotional and advertising materials, any requirements of the FDA imposed as a condition of any Regulatory Approval, industry marketing codes such as the PhRMA code, and implementation guidelines to be mutually agreed upon by the Parties. TGTX shall implement appropriate policies and procedures relating to safety reporting, approval of TGTX Promotional Materials, sales force training and similar matters.

(b) **TGTX's Compliance Policies**. TGTX, on Precision's request, shall provide Precision copies of and access to TGTX's policies for compliance with Applicable Law relating to promotional and advertising materials, and TGTX's procedures relating to the approval of promotional materials, sales force compliance training, and related matters. Precision shall have the right to audit TGTX's compliance policies and procedures, no more than [***].

5.1.4 **Complaints and Inquiries**. The Parties shall mutually develop a protocol for responding to any and all complaints, medical questions, or other inquiries relating to the Licensed Product in the Licensed Field in the Territory, which are directed to such Parties' respective sales representatives. TGTX shall be responsible for responding to complaints, medical questions, or other inquiries relating to the TGTX Commercialization Activities and Precision or its designee shall be responsible for responding to all other complaints, medical questions, or other inquiries. TGTX shall notify Precision of, and provide to Precision, all pertinent information in TGTX's possession relating to any and all suspected or actual tampering, counterfeiting, or contamination or other similar problems with respect to the Licensed Product in the Licensed Field in the Territory. Precision shall notify TGTX of, and provide to TGTX, all pertinent information in Precision's possession relating to any and all suspected or actual tampering, counterfeiting, or contamination or other similar problems with respect to any Licensed Product outside the Licensed Field.

5.2 **Reports**. On an annual basis commencing on the first anniversary of the First Commercial Sale, TGTX will be obligated to deliver to Precision a report describing the status of TGTX's and its Affiliates and Sublicensees' Commercialization efforts with respect to Licensed Products in the Licensed Field in the Territory. In addition, Precision may from time to time provide TGTX with written requests describing specific types of information Precision requires in order to comply with Precision's reporting and disclosure obligations under any Applicable Laws, and TGTX shall include such information in such reports.

5.3 **Compensation for Sales Outside the Licensed Field**. If Precision reasonably believes that there are material sales recorded or conducted by or on behalf of TGTX, its Affiliates, or its Sublicensees of the Licensed Product outside the Licensed Field in the Territory, Precision shall be permitted to implement and conduct reasonable procedures under which material sales and purchases of the Licensed Product in the Territory and other related market research data shall be audited and monitored, using for example IQVIA data and information, and TGTX agrees to reasonably cooperate with Precision in the implementation and conduct of such procedures.

ARTICLE 6

MANUFACTURING

6.1 **Licensed Products**. Except as provided in Section 6.2, and subject to the terms of this Agreement, TGTX shall be solely responsible, at its sole cost and expense, for all Manufacturing (or having Manufactured through a CMO), including development of any Chemistry, Manufacturing and Controls sections of any Regulatory Filings or Regulatory Approval, for all Licensed Products for TGTX's, its Affiliates' and Sublicensees' pre-clinical and clinical Development and Commercialization in the Licensed Field in the Territory under this Agreement.

6.2 **Clinical Supply**.

6.2.1 Within [***] after the Effective Date, Precision shall deliver to TGTX [***] a single batch (batch number PBCAR0191-2023-0006) of released Clinical Trial material for the Licensed Product (in its form in existence as of the Effective Date). [***], together with access to all relevant quality, facility and equipment-related documentation in respect of such batch. Precision shall use Commercially Reasonable Efforts to promptly respond to any questions or inquiries from TGTX with respect to such batch. TGTX and Precision will also, within [***] after the Effective Date, enter into a quality agreement, in standard and customary form, with respect to such batch. In addition, Precision shall facilitate TGTX's entering into agreements with Precision's Third Party vendors for the storage, handling and shipping of such batch and, until such time, shall reasonably continue to provide such services directly or with its vendors with respect to such batch at Precision's reasonable cost, which TGTX shall promptly reimburse.

6.2.2 Precision acknowledges and agrees that, pursuant to Section 7.3 of the Precision-Imugene License Agreement, Precision has the right to designate, and hereby designates TGTX, and will communicate such designation to Imugene promptly after entering into this Agreement, as the party with which Imugene must enter into an agreement to provide for the supply to TGTX of [***], together with a quality agreement setting forth Imugene's (or its Affiliate's) quality and compliance obligations with respect to the manufacture and supply of the applicable product, in each case, in accordance with Section 7.3 of the Precision-Imugene License Agreement, [***] (such agreement, including the documentation of the technology transfer right and obligation described in this Section 6.2.2, the "***Clinical Supply Agreement***"). [***]. In addition, Precision acknowledges and agrees that, pursuant to Section 7.2 of the Precision-Imugene License Agreement, Precision has the right to designate, and hereby designates, TGTX, and will communicate such designation to Imugene promptly after entering into this Agreement, as the party with which Imugene shall conduct a manufacturing technology transfer in accordance with Section 7.2 of the Precision-Imugene License Agreement, including entering into a technology transfer plan, with such technology transfer right and obligation to be set forth in the Clinical Supply Agreement or a related agreement, in form reasonably acceptable to TGTX. [***].

ARTICLE 7

LICENSE RIGHTS

7.1 **License Grants to TGTX**.

7.1.1 **Exclusive License**. Subject to the terms and conditions of this Agreement, Precision (on behalf of itself and its Affiliates) hereby grants to TGTX an exclusive (even as to Precision and its Affiliates), royalty-bearing (as set forth in Section 8.6), license, with the right to grant sublicenses (through multiple tiers, as provided in Section 7.3), under the Precision Product IP, to Exploit, or to have Exploited, the Licensed Product in the Licensed Field in the Territory; *provided*, however that the foregoing license shall be non-exclusive with respect to Manufacture of the Licensed Product. Notwithstanding the foregoing, Precision or its designee may conduct Research and other Development activities with the Licensed Product; *provided* that such activities are directed to the Research and Development of the ARCUS Technology and not the Licensed Product itself, and further *provided* that Precision shall not have the right to conduct, or authorize any Affiliate or Third Party to conduct: (a) Research or other Development activities with the Licensed Product that are specifically directed to (i) any disease, condition or disorder in the Licensed Field or (ii) [***]; or (b) any clinical study of the Licensed Product in the Licensed Field in the Territory. For the avoidance of doubt, TGTX may utilize TGTX Arising IP in connection with the foregoing license.

7.1.2 **Non-Exclusive Licenses**. Subject to the terms and conditions of this Agreement, Precision (on behalf of itself and its Affiliates) hereby grants to TGTX a non-exclusive, royalty-bearing (as set forth in Section 8.6) license, with the right to grant sublicenses (through multiple tiers, as provided in Section 7.3), under the Precision Platform IP, to Exploit, or to have Exploited, the Licensed Product in the Licensed Field in the Territory. The license set forth in this Section 7.1.2 under Precision Platform IP is intended to provide TGTX a "freedom to operate" license with respect to the Precision Platform IP solely for the Exploitation of Licensed Products in the Licensed Field, and not for TGTX's independent use of the Precision Platform IP. TGTX acknowledges and agrees that TGTX will not have any right to (a) access or receive any ARCUS Technology, (b) design, create, select, or optimize any ARCUS Nucleases using the ARCUS Technology, or (c) otherwise use the ARCUS Technology as a genome engineering tool; in the case of (a) and (c), except to the extent that the ARCUS Technology is embodied in the Licensed ARCUS Nuclease or the Licensed Product and utilized solely in TGTX's practice of the licenses granted in Section 7.1.1. The Parties agree that ARCUS Technology will not be transferred to TGTX or its designee under this Agreement. For the avoidance of doubt, TGTX may utilize TGTX Arising IP in connection with the foregoing license.

7.1.3 **Restrictions on Licensed ARCUS Nuclease**. TGTX acknowledges and agrees that the foregoing license does not include any right to, and TGTX shall not, and shall not permit any of its Affiliates or its or their Sublicensees to (a) modify the Licensed ARCUS Nuclease, or (b) [***], in each case (a) and (b), without Precision's prior written consent.

7.2 **License Grant to Precision**. Subject to the terms and conditions of this Agreement, TGTX agrees to grant and hereby grants (on behalf of itself and its Affiliates) to Precision a perpetual, fully-paid, royalty-free, non-exclusive license, with right to grant sublicenses through multiple tiers, under all TGTX Arising IP and any TGTX Background IP that is necessary or reasonably useful for the applicable Licensed Product, or its use or manufacture, to Exploit, or to have Exploited, any Licensed Product in all fields in the Territory. Notwithstanding the non-exclusive nature of the foregoing license, TGTX shall not Research, Develop (including conduct of any Clinical Trial) or otherwise Exploit the Licensed Products outside the Licensed Field. Precision shall not practice the foregoing license in the Licensed Field unless and until the Licensed Product has become a Terminated Product in accordance with Article 13.

7.3 **Third Party Sublicenses**.

7.3.1 **Generally**. TGTX and Precision may grant one or more sublicenses under the rights and licenses granted to it under Section 7.1 (in the case of TGTX) or Section 7.2 (in the case of Precision), in full or in part, to Third Parties (with the right to sublicense through multiple tiers); *provided*, that: (a) any such permitted sublicense is consistent with and subject to the terms and conditions of this Agreement, including the confidentiality provisions of Article 12 and the intellectual property provisions of Article 9 (in the case of TGTX); and (b) the Party granting such sublicense shall remain responsible for performance of such Party's obligations under this Agreement and shall be responsible for all actions of each such sublicensee as if such sublicensee were the Party hereunder.

7.3.2 **By TGTX**. TGTX will not grant any sublicense or other right that permits any Research, Development or Commercialization of the Licensed Product by any Third Party without Precision's prior written consent, *provided* that TGTX may grant any sublicense or other right, without Precision's prior written consent, to (a) a contract Distributor, Third Party contractor or service provider, including a CMO or contract research organization, in order to provide services for a fee for the benefit of TGTX or (b) a sublicensee that is a pharmaceutical or biotechnology company that [***]. Without limiting the foregoing, any sublicense or other right must include in the written agreement pursuant to which such sublicense or other right is granted provisions ensuring that (x) the Licensed Product is Exploited in a manner consistent with the requirements set forth in this Agreement, (y) Precision is an intended third party beneficiary to such agreement and (z) all rights attaching therefrom in relation to any activities contemplated by this Agreement and the right to enforce the provisions of such agreement against the applicable Third Party are vested in Precision. To the extent required by the Cellectis Agreement, each sublicense granted by TGTX under any Patents within Precision Product IP must grant the same scope of rights for all Patents within Precision Product IP and each sublicense granted by TGTX under any Patents within Precision Platform IP must grant the same scope of rights for all Patents within Precision Platform IP. Any purported sublicense or other right granted by TGTX that is not in compliance with the requirements of this Section 7.3.2 shall be null and void. TGTX shall deliver a copy of each sublicense, or amendment thereto, to Precision promptly following the execution thereof.

7.4 **Retention of Rights; No Implied Rights**. Except as expressly set forth in this Agreement, neither Party shall be granted, by implication, estoppel or otherwise, any license or right to or under any other intellectual property interest, including any trademarks, Know-How, or Patents, of the other Party. The licenses granted by Precision to TGTX hereunder do not include any rights with respect to other products or therapies with which a Licensed Product may be combined or any other products or therapies other than the Licensed Products under this Agreement. Each Party covenants that it will not use or practice any of the other Party's intellectual property rights licensed to it under this Agreement except for the purposes expressly permitted in the applicable license grant. TGTX agrees to impose the foregoing covenant in this Section 7.4 on all of its Affiliates and sublicensees.

7.5 **Existing In-License Agreements**.

7.5.1 For clarity, the license granted to TGTX in Section 7.1 includes a sublicense under certain Duke IP and Cellectis Patents.

7.5.2 **Cellectis Patents.** TGTX acknowledges and agrees that rights under certain Precision Patents are licensed to Precision by Cellectis S.A. (the "***Cellectis Patents***") under that certain Patent Cross-License Agreement between Cellectis S.A. ("***Cellectis S.A.***") and Precision dated January 23, 2014 (the "***Cellectis Agreement***"), and, notwithstanding any exclusive license granted to TGTX under this Agreement, (a) Cellectis S.A. retains rights under the Cellectis Patents and is not restricted from granting rights to Third Parties under the Cellectis Patents, (b) any licenses and rights granted by Precision to TGTX under the Cellectis Patents are granted only within the permissible scope of sublicenses granted under the Cellectis Agreement, and (c) pursuant to the Cellectis Agreement, Cellectis S.A. retains non-exclusive rights under certain Precision Patents identified in the Cellectis Agreement, which may be further sublicensed by Cellectis S.A. without Precision control or consent. TGTX acknowledges and agrees that any exercise of any right by Cellectis S.A., or by any Third Party through Cellectis S.A., under the Cellectis Agreement shall not constitute a breach of this Agreement by Precision.

7.5.3 **Duke IP.** TGTX acknowledges and agrees that any licenses and rights granted by Precision to TGTX under the Duke IP are granted subject to the terms and conditions of the Duke Agreement, including Duke's right to practice under the Duke IP for its own internal, non-commercial, educational, research and clinical purposes, and subject to the rights of the United States Government and applicable limitations under 37 C.F.R. § 401, Public Law 96-517 and Public Law 98-620 resulting from the United States Government's funding of research leading to creation of the Duke IP. Without limiting the foregoing, TGTX agrees to comply with any obligations resulting from such government rights with respect to its practice of the Duke IP (if any) under this Agreement.

7.5.4 **Other Third Party IP**. In the event that, after the Effective Date, any Know-How or Patent licensed to Precision by a Third Party (other than the Duke IP or Cellectis Patents) becomes necessary or reasonably useful for the Exploitation of a Licensed Product, then the Parties would discuss in good faith the terms pursuant to which Precision would grant a sublicense to TGTX under such Know-How or Patent, and subject to and effective upon the Parties' mutual written agreement to such terms, such Know-How or Patent would be sublicensed by Precision to TGTX; *provided*, however, that nothing in this Agreement shall require Precision to grant any rights to TGTX under Precision's agreement with MaxCyte. For the avoidance of doubt, this Section 7.5.4 does not (a) apply to the Duke IP, Cellectis Patents or Existing In-License Agreements or (b) limit any of Precision's representations and warranties under Section 10.1 and Section 10.2.

7.6 **Consideration**. The Parties acknowledge that each of the licenses and rights granted by Precision in this Agreement and each of the provisions of this Agreement for efforts or assistance by Precision and access to Precision Technology, individually and collectively, constitute good, valuable and sufficient consideration for each and all of the fees and payments called for hereunder and for each and all of the other obligations of TGTX, its Affiliates and its and their Sublicensees; and the Parties further acknowledge that the individual and collective rights under and access to Precision Technology renders the way in which those fees and payments hereunder are determined, their amount (and potential reduction) and their duration, appropriate and desirable as a matter of convenience.

7.7 **Notice**. Precision shall provide notice to TGTX in the event that Precision begins a process or enters into negotiations with any Third Party regarding a grant of license or other rights in [***].

ARTICLE 8

FEES, EQUITY ISSUANCES, ROYALTIES, & PAYMENTS

8.1 **Upfront Payment**. As partial consideration for the rights granted by Precision to TGTX pursuant to the terms of this Agreement, within thirty (30) days following the Effective Date, TGTX shall make a one-time payment to Precision equal to Five Million Two Hundred Fifty Thousand Dollars ($5,250,000).

8.2 **Matters Related to Precision Equity Issuances**.

8.2.1 **Equity Issuances by Precision**. As partial consideration for the rights granted by Precision to TGTX pursuant to the terms of this Agreement, Precision agrees to issue to TGTX, and TGTX agrees to pay for and accept, the Precision Shares, subject to the terms and conditions specified herein:

(a) Within thirty (30) days following the Effective Date, together with payment of the upfront payment pursuant to Section 8.1, TGTX shall make a one-time payment to Precision equal to Two Million Two Hundred Fifty Thousand Dollars ($2,250,000) (the "***Upfront Precision Stock Payment***"). TGTX shall, at least [***] prior to the date on which TGTX shall make the Upfront Precision Stock Payment, deliver a notice to Precision specifying the date on which such payment shall be made. Upon receipt of such payment and satisfaction of TGTX's obligations under Section 8.1, Precision shall issue to TGTX the number of Precision Shares (rounded down to the nearest whole share) obtained by dividing the Upfront Precision Stock Payment by the Precision Share Price for the thirty (30) Trading Days preceding the Effective Date (the "***Upfront Precision Stock Issuance***");

(b) Within twelve (12) months following the Effective Date, TGTX shall make a one-time payment to Precision equal to Two Million Five Hundred Thousand Dollars ($2,500,000) (the "***Deferred Precision Stock Payment***"). TGTX shall, at least [***] prior to the date on which TGTX shall make the Deferred Precision Stock Payment, deliver a notice to Precision specifying the date on which such payment shall be made. Upon receipt of such payment, Precision shall issue to TGTX the number of Precision Shares (rounded down to the nearest whole share) obtained by dividing the Deferred Precision Stock Payment by the Precision Share Price for the thirty (30) Trading Days preceding the date on which Precision receives the payment required by this Section 8.2.1(b) (such issuance, the "***Deferred Precision Stock Issuance***");

(c) Upon the achievement of Milestone Event 1 (as set forth in Section 8.3), together with payment of the corresponding milestone payment pursuant to Section 8.3, TGTX shall make a one-time payment to Precision equal to Two Million Two Hundred Fifty Thousand Dollars ($2,250,000) (the "***Milestone 1 Precision Stock Payment***") no later than thirty (30) days following the achievement of Milestone Event 1. TGTX shall, at least [***] prior to the date on which TGTX shall make the Milestone 1 Precision Stock Payment, deliver a notice to Precision specifying the date on which such payment shall be made. Upon receipt of such payment and satisfaction of TGTX's payment obligations under Section 8.3 with respect to Milestone Event 1, Precision shall issue to TGTX the number of Precision Shares (rounded down to the nearest whole share) obtained by dividing the Milestone 1 Precision Stock Payment by the Precision Share Price for the thirty (30) Trading Days preceding the achievement date of Milestone Event 1 (such issuance, the "***Milestone 1 Precision Stock Issuance***"); and

(d) Upon the achievement of Milestone Event 2 (as set forth in Section 8.3), together with payment of the corresponding milestone payment pursuant to Section 8.3, TGTX shall make a one-time payment to Precision equal to Three Million Dollars ($3,000,000) (the "***Final Precision Stock Payment***" and together with the Upfront Precision Stock Payment, the Deferred Precision Stock Payment and the Milestone 1 Precision Stock Payment, the "***Precision Stock Payments***") no later than thirty (30) days following the achievement of Milestone Event 2. TGTX shall, at least [***] prior to the date on which TGTX shall make the Final Precision Stock Payment, deliver a notice to Precision specifying the date on which such payment shall be made. Upon receipt of such payment and satisfaction of TGTX's payment obligations under Section 8.3 with respect to Milestone Event 2, Precision shall issue to TGTX the number of Precision Shares (rounded down to the nearest whole share) obtained by dividing the Final Precision Stock Payment by the Precision Share Price for the thirty (30) Trading Days preceding the achievement date of Milestone Event 2 (such issuance, the "***Final Precision Stock Issuance***", and, together with the Upfront Precision Stock Issuance, the Deferred Precision Stock Issuance and the Milestone 1 Precision Stock Issuance, the "***Precision Stock Issuances***").

8.2.2 **Representations and Warranties**. Precision represents and warrants, as of the Effective Date, that:

(a) Subject to the accuracy of the representations made by TGTX in Section 8.2.3 of this Agreement, the offer, issuance and sale of the Precision Shares to TGTX as contemplated hereby will be exempt from the registration requirements of the Securities Act of 1933, as amended (the "***Securities Act***") and the registration and qualification requirements of all applicable securities laws of the states of the United States;

(b) Precision has all requisite corporate power and authority to enter into and to perform its obligations under this Agreement and to consummate the transactions contemplated hereby;

(c) Precision has all requisite corporate power and authority to issue the Precision Shares in accordance with the terms hereof;

(d) The Precision Shares have been duly authorized and, upon issuance in accordance with the terms of this Agreement, will be validly issued, fully paid and non-assessable and will not be subject to liens, encumbrances or restrictions on transfer, including preemptive rights, rights of first refusal, purchase options, call options, subscription rights or other similar rights of stockholders of Precision, other than as arising pursuant to this Agreement, as a result of any action by TGTX, or any of its Affiliates, or under federal or state securities laws. No stop order or suspension of trading of the Precision Common Stock has been imposed by Nasdaq or the Securities and Exchange Commission and remains in effect;

(e) The Precision Common Stock is listed on Nasdaq and registered pursuant to Section 12(b) of the Exchange Act of 1934, as amended (the "***Exchange Act***"), and Precision has taken no action designed to or reasonably likely to have the effect of terminating the registration of the Precision Common Stock under the Exchange Act or delisting the Precision Common Stock from Nasdaq or any other applicable exchange; and

(f) The issuance and sale of the Precision Shares will not, on the date of the issuance and sale of the Precision Shares, (i) conflict with or result in a violation of any provision of Precision's amended and restated certificate of incorporation, amended and restated bylaws and similar organizational documents, (ii) result in any encumbrance upon any of the Precision Shares, other than restrictions on resale pursuant to securities laws or as set forth in this Agreement, (iii) materially violate or conflict with, or result in a material breach, default, modification, acceleration of payment or termination under any provision of, or constitute a material default under, any contract entered into by Precision that is required to be filed as an exhibit by Precision in its public filings with the Securities and Exchange Commission pursuant to Items 601(b)(2), 601(b)(4), 601(b)(9) and 601(b)(10) of Regulation S-K promulgated by the Securities and Exchange Commission.

8.2.3 **Representations and Warranties of TGTX**. TGTX represents and warrants that (a) it is an "accredited investor" as that term is defined in Rule 501(a) of Regulation D under the Securities Act; (b) it is acquiring the Precision Shares for investment for TGTX's own account and not as a nominee or agent, and not with a view to the resale or distribution of any part thereof; (c) it does not have any contract, undertaking, agreement or arrangement with any Person to sell, transfer or grant participation to such Person or to any Third Party, with respect to any of such Precision Common Stock; and (d) it acknowledges that Precision is under no obligation to register the Precision Shares or to furnish any information or take any other action to assist TGTX in complying with the terms and conditions of any exemption which might be available under the Securities Act or any state securities laws with respect to sales of the Precision Shares in the future.

8.2.4 **Restrictions on the Precision Shares**. TGTX understands and agrees that the Precision Shares may not be sold, transferred, or otherwise disposed of without registration under the Securities Act or an exemption therefrom, and that in the absence of an effective registration statement covering the Precision Shares or any available exemption from registration under the Securities Act, the Precision Shares must be held indefinitely. TGTX understands the Precision Shares will bear restrictive legends in substantially the following form (and a stop-transfer order may be placed against transfer of the Precision Shares):

> THESE SHARES HAVE NOT BEEN REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR ANY APPLICABLE STATE SECURITIES LAWS AND MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF A REGISTRATION STATEMENT IN EFFECT WITH RESPECT TO THE SECURITIES UNDER THE SECURITIES ACT OR APPLICABLE STATE SECURITIES LAWS OR AN OPINION OF COUNSEL (WHICH COUNSEL SHALL BE REASONABLY SATISFACTORY TO PRECISION BIOSCIENCES, INC.) THAT SUCH REGISTRATION IS NOT REQUIRED OR UNLESS SOLD PURSUANT TO RULE 144 OF THE SECURITIES ACT.
>
> THE SALE, PLEDGE, HYPOTHECATION AND TRANSFER OF THESE SHARES IS SUBJECT TO THE TERMS AND CONDITIONS OF THE LICENSE AGREEMENT DATED JANUARY 7, 2024 BY AND AMONG PRECISION BIOSCIENCES, INC., TG CELL THERAPY, INC. AND TG THERAPEUTICS, INC., AS SUCH AGREEMENT MAY BE AMENDED FROM TIME TO TIME.
>
> THESE SHARES ARE SUBJECT TO AN AGREEMENT TO VOTE THESE SHARES IN THE MANNER SET FORTH IN THE LICENSE AGREEMENT DATED JANUARY 7, 2024 BY AND AMONG PRECISION BIOSCIENCES, INC., TG CELL THERAPY, INC., AND TG THERAPEUTICS, INC, AS SUCH AGREEMENT MAY BE AMENDED FROM TIME TO TIME.

If such Precision Shares are transferred (other than to a Permitted Transferee) pursuant to Section 8.2.6 of this Agreement, TGTX may request that Precision remove, and if so requested, Precision shall agree to authorize and instruct (including by causing any required legal opinion to be provided) the removal of any legend from the Precision Shares, if permitted by applicable securities law, within [***] of any such request; *provided*, however, that each Party will be responsible for any fees it incurs in connection with such request and removal.

Upon request from TGTX, subject to and following the expiration of the applicable Holding Period (as defined below), in connection with a sale or otherwise pursuant to Rule 144 of the Securities Act ("***Rule 144***"), Precision shall remove the legend on such Precision Shares set forth above, to be re-issued in certificate form or book-entry evidence of ownership, in each case without such legend; provided, that, (a) such Precision Shares are eligible to be sold pursuant to Rule 144 at a time the transferor is not, and has not been for ninety (90) days prior to such time, an affiliate of Precision as defined under Rule 144, or (b) if an affiliate, then sold or transferred in compliance with Rule 144, including without limitation in compliance with the current public information requirements of Rule 144 if applicable to Precision at the time of such sale or transfer, and, in the cases of clauses (a) and (b), the holder and its broker have delivered customary documents requested by counsel to Precision in connection with such sale or transfer; and, provided, further, that if an opinion of counsel is required, then, subject to receipt of customary documents requested by counsel to Precision, Precision shall instruct Precision's counsel to deliver such legal opinion.

8.2.5 **Limitations on the Number of Precision Shares Issued and Issuance Price**. Notwithstanding anything to the contrary in this Agreement, in no event shall the aggregate number of Precision Shares issuable pursuant to the Precision Stock Issuances exceed the Exchange Cap or otherwise cause Precision to be required to obtain Stockholder Approval. If, at any time following the Upfront Precision Stock Issuance but prior to any issuance of Precision Shares contemplated by Sections 8.2.1(b), 8.2.1(c), or 8.2.1(d), Precision (y) is no longer registered pursuant to Section 12(b) of the Exchange Act, or (z) has undergone a merger or consolidation with a Third Party in which Precision is not the surviving entity (each, an "***Equity Termination Event***"), then Precision (or its successor) shall not be obligated to issue any Precision Shares (or shares of any successor's equity) following such Equity Termination Event; *provided*, however, that nothing in this Section 8.2.5 shall limit the aggregate cash payments (including the Precision Stock Payments) payable to Precision in connection with any Milestone Event.

8.2.6 **Lock Up**. TGTX agrees that it will hold and will not, directly or indirectly, without Precision's prior approval, sell, transfer or otherwise dispose of any shares of Precision Common Stock or any securities convertible into or exercisable or exchangeable for Precision Common Stock (the "***Lock-Up Securities***"), or otherwise make any short sale of, grant any option for the purchase of, or enter into any hedging or similar transaction with the same economic effect as a sale of the Lock-Up Securities (any such transaction, a "***Transfer***"), until the expiration of the following holding periods (each, a "***Holding Period***"): (a) the three (3) year anniversary of the Effective Date with respect to the Precision Shares issued in connection with the Upfront Precision Stock Issuance; (b) the two (2) year anniversary of the Deferred Precision Stock Issuance with respect to the Precision Shares issued in connection with the Deferred Precision Stock Issuance; (c) the two (2) year anniversary of the Milestone 1 Precision Stock Issuance with respect to the Precision Shares issued in connection with the Milestone 1 Precision Stock Issuance; and (d) the two (2) year anniversary of the Final Precision Stock Issuance with respect to the Precision Shares issued in connection with the Final Precision Stock Issuance. Notwithstanding the foregoing, TGTX shall not be prohibited from (y) transferring any Lock-Up Securities to (i) a Permitted Transferee or (ii) Precision; or (z) disposing any Lock-Up Securities pursuant to (i) any merger, consolidation or similar transaction to which Precision is a constituent corporation or (ii) a bona fide tender offer or exchange offer made to all of the holders of Precision Common Stock by a Person other than TGTX (or any of its Affiliates or any Person acting on behalf of or as part of a group or in concert with TGTX or any of its Affiliates). Notwithstanding the foregoing, the restrictions on the Lock-Up Securities automatically shall terminate and be of no further force or effect (aa) in the event Precision enters into any definitive agreement with a Third Party during a Holding Period contemplating a (i) Change of Control pursuant to a merger, consolidation or similar transaction to which Precision is a constituent corporation or (ii) tender offer or exchange offer to be made to all of the holders of Precision Common Stock by a Third Party (other than a Third Party acting on behalf of or as part of a group or in concert with TGTX), (bb) if at any time during a Holding Period the Precision Shares represent greater than 19.99% ownership of Precision's then-outstanding voting securities solely as a result of an action taken by Precision (*provided* that the restrictions shall only terminate and be of no further force and effect to the extent necessary to permit TGTX to reduce its ownership of shares to 19.99%), or (cc) upon the termination of this Agreement in accordance with its terms, whichever first occurs.

8.2.7 **Voting Agreement**. During the three (3) year period following the Effective Date (the "***Restricted Period***"), if Precision, its Chief Executive Officer and/or its Chief Financial Officer (each, a "***Proxyholder***") instructs TGTX in writing to vote in favor of, or against, any matter, action, ratification or other event for which approval of the holders of Precision Common Stock is sought or upon which such holders are otherwise entitled to vote, including the election of directors, but excluding any Extraordinary Matter (collectively, a "***Stockholder Matter***"), then TGTX will (a) after receiving proper notice of any meeting of stockholders of Precision related to such Stockholder Matter (or, if no notice is required or such notice is properly waived, after notice from the Proxyholder is given), be present, in person or by proxy, as a holder of shares of Precision Common Stock at all such meetings and be counted for the purposes of determining the presence of a quorum at such meetings and (b) vote (in person or by proxy, as applicable) all voting securities of Precision as to which TGTX has beneficial ownership or as to which TGTX otherwise exercises voting or dispositive authority in the manner directed by the Proxyholder. Notwithstanding the foregoing, TGTX may vote any or all of the securities of Precision as to which it is entitled to vote, as it may determine in its sole discretion, with respect to (y) any transaction which would result in a Change of Control of Precision and (z) any liquidation or dissolution of Precision (each, an "***Extraordinary Matter***"), if such Extraordinary Matter is presented to Precision's stockholders for approval. To secure TGTX's obligations to vote in accordance with this Agreement and to comply with the other terms hereof, TGTX hereby appoints the Proxyholder, or his or her designees, as TGTX's true and lawful proxy and attorney, with the power to act alone and with full power of substitution, to vote all voting securities of Precision as to which TGTX has beneficial ownership or as to which TGTX otherwise exercises voting or dispositive authority in accordance with the provisions set forth in this Agreement and to execute all appropriate instruments consistent with this Agreement. The proxy and power of attorney granted by TGTX pursuant to this Section 8.2.7 are coupled with an interest, are given to secure the performance of TGTX's duties under this Agreement and will be irrevocable until the third (3rd) anniversary following the Effective Date. The proxy and power of attorney will survive any merger, consolidation, conversion or reorganization of TGTX or any other entity holding any voting securities of Precision (other than any securities sold by TGTX to a Third Party in compliance with Section 8.2.6). For the avoidance of doubt, the proxy granted by this Section 8.2.7 shall not apply to any Extraordinary Matter. Notwithstanding the foregoing, the provisions of this Section 8.2.7 shall automatically terminate and be of no further force or effect upon the termination of this Agreement in accordance with its terms.

8.2.8 **Standstill**. During the Restricted Period, TGTX and its Affiliates will not, directly or indirectly, except as expressly approved or invited by Precision in writing:

(a) effect or seek, offer or propose (whether publicly or otherwise) to effect, or cause or participate in or in any way advise, assist or encourage any other Person to effect or seek, offer or propose (whether publicly or otherwise) to effect or participate in, directly or indirectly, (i) any acquisition of any securities of Precision or any of its subsidiaries or any securities convertible into or exercisable or exchangeable for any securities of Precision or any of its subsidiaries (or beneficial ownership thereof); (ii) any acquisition of any material assets of Precision or any of its subsidiaries, (iii) any tender or exchange offer, merger or other business combination or Change of Control involving Precision or any of its subsidiaries, (iv) any recapitalization, restructuring, liquidation, dissolution or other extraordinary transaction with respect to Precision or any of its subsidiaries, or (v) any "solicitation" of "proxies" (as such terms are used in the proxy rules of the Securities and Exchange Commission) or consents to vote any securities of Precision;

(b) form, join or in any way participate in a "group" (as defined under the Exchange Act) with respect to any securities of Precision or any of its subsidiaries;

(c) otherwise act, alone or in concert with others, to seek to control or influence the board of directors or the management or policies of Precision or any of its subsidiaries;

(d) take any action that would reasonably be expected to require Precision to make a public announcement regarding any of the matters set forth in this Section 8.2.8;

(e) enter into any discussions or arrangements with any Third Party with respect to any of the foregoing; or

(f) publicly disclose any intention, plan or arrangement regarding any of the matters set forth in this Section 8.2.8.

Notwithstanding the provisions set forth in this Section 8.2.8 (the "***Standstill Provisions***"), (x) if at any time (i) a Third Party enters into an agreement with Precision contemplating a Change of Control of Precision, including a merger, consolidation or other business combination transaction or tender offer related thereto, or the purchase of all or substantially all of the assets of Precision and its subsidiaries, or publicly announces its intention to do so, then the Standstill Provisions shall be suspended and of no further force or effect until the termination of such agreement or the public announcement of a withdrawal or abandonment of such intention, at which time the Standstill Provisions will be reinstated and apply in full force and effect or (ii) a Third Party commences, or publicly announces an intention to commence, a tender, exchange or offer that, if consummated, would result in a Change of Control of Precision, then the Standstill Provisions shall be suspended and of no force or effect until the expiration or termination of a tender, exchange or offer that has been commenced or the public announcement of a withdrawal or abandonment of an intention to commence a tender, exchange or offer at which time such restrictions will be reinstated and apply in full force and effect; (y) TGTX will not be precluded from making any confidential offers or proposals to the Precision Board of Directors in a manner reasonably believed not to require Precision to make a public announcement of such offer or proposal; *provided* that TGTX shall not publicly disclose any such offers or proposals; and (z) TGTX shall not be precluded from owning or acquiring interests in mutual funds or similar entities that own shares of Precision Common Stock, and nothing herein shall prohibit passive investments by pension or employee benefit plans of TGTX. Notwithstanding the foregoing, the Standstill Provisions shall automatically terminate and be of no further force or effect upon the termination of this Agreement in accordance with its terms.

8.3 **Clinical and Regulatory Milestones**. As partial consideration for the rights granted by Precision to TGTX hereunder with respect to the Licensed Product, TGTX shall pay to Precision or its designee the following milestone payments in the corresponding amount set forth in the right-hand column of the table immediately below upon the first achievement of each of the following milestone events in the left-hand column of the table immediately below by TGTX, its Affiliates or Sublicensees. The Milestone Events set forth below are intended to be sequential; achievement of a particular Milestone Event shall result in deemed achievement of all earlier Milestone Events; for example, achievement of Milestone Event 4 or Milestone Event 7 shall result in deemed achievement of Milestone Events 1 – 3.

	Clinical and Regulatory Milestone Event	**Milestone Payment (USD)**
1	[***]	$5,250,000
2	[***]	[***]
3	[***]	[***]
4	[***]	[***]
5	[***]	[***]
6	[***]	[***]
7	[***]	[***]
8	[***]	[***]
9	[***]	[***]

8.3.1 For the avoidance of doubt, each of Milestone Events 1 – 9 is achievable only once.

8.3.2 TGTX shall notify Precision in writing no later than [***] after the achievement of each Milestone Event set forth in the table above and shall make the corresponding milestone payment within [***] after receipt by TGTX of an invoice from Precision delivered after such achievement; *provided*, however, that, subject to Section 8.14, TGTX may elect, in its discretion, to pay any such milestone payment (other than the payments with respect to Milestone Events 1 and 2) in (a) cash or (b) a combination of at least fifty percent (50%) cash and at most fifty percent (50%) TGTX Parent Consideration Shares that equal, in aggregate, the amount of such milestone payment.

8.4 **Commercial Milestones**. As partial consideration for the rights granted by Precision to TGTX hereunder with respect to the Licensed Product, TGTX shall pay to Precision the following milestone payments in the corresponding amount set forth in the right-hand column of the table immediately below (each, a "***Commercial Milestone Payment***") upon the first achievement of each of the following milestone events in the left-hand column of the table immediately below by TGTX, its Affiliates or Sublicensees. For purposes of determining whether the Net Sales thresholds in the table below have been achieved, all Net Sales of all Licensed Products shall be aggregated globally for all sales made by TGTX or any of its Affiliates or its or their Sublicensees of all Licensed Product (regardless of indication), in any and all preparations, formulations, dosages, packaging or methods of administration thereof.

Commercial Milestone Event	Milestone Payment (USD)
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

TGTX shall promptly notify Precision in writing of the achievement of each Milestone Event set forth in the table above within [***] after the end of the Calendar Year in which such milestone has been achieved and shall make the corresponding milestone payment within [***] after receipt by TGTX of an invoice from Precision delivered after such achievement; *provided*, however, that, subject to Section 8.14, TGTX may elect, in its discretion, to pay any such milestone payment in (a) cash or (b) a combination of at least fifty percent (50%) cash and at most fifty percent (50%) TGTX Parent Consideration Shares that equal, in aggregate, the amount of such milestone payment. Achievement of each Milestone Event measured by Net Sales shall result in achievement of all Milestone Events measured by a lower amount of Net Sales. To clarify, each Milestone Payment shall be a one-time payment, and once paid by TGTX to Precision, TGTX shall have no further obligation to make additional payments for the same Milestone Event.

8.5 **[***].**

8.6 **Royalties**.

8.6.1 **Royalty Term**. TGTX shall pay Precision royalties as set forth in this Section 8.6 on a Licensed Product-by-Licensed Product and country-by-country basis in the Territory during the period of time beginning on the date of the First Commercial Sale of such Licensed Product in such country and continuing until the latest to occur of: (a) the expiration of the last-to-expire Valid Claim in such country Covering such Licensed Product; (b) the expiration of any period of data, regulatory, or market exclusivity, or supplemental protection certificates (other than Patents) covering the Licensed Product in such country; and (c) ten (10) years after the First Commercial Sale of such Licensed Product in such country (the "***Royalty Term***").

8.6.2 **Royalty Rates**. On a Licensed Product-by-Licensed Product and country-by-country basis, during the Royalty Term, TGTX shall pay to Precision a royalty equal to the percentages of aggregate annual Net Sales of such Licensed Product, as set forth below (the "***Royalty***"), calculated by multiplying the applicable royalty rate percentage for the region in which the applicable Net Sales occurred by the portion of aggregate, global Net Sales of the Licensed Products that occurred in the applicable region (i.e., inside or outside of the U.S.) in such Calendar Year. For purposes of determining whether the Net Sales thresholds in the table below have been achieved, all Net Sales of all Licensed Products shall be aggregated globally for all sales made by TGTX or any of its Affiliates or its or their Sublicensees of all Licensed Product (regardless of indication), in any and all preparations, formulations, dosages, packaging or methods of administration thereof, in all applicable countries during the Royalty Term (i.e., regardless of whether such Net Sales occur inside or outside of the U.S.).

Location of Net Sales	Annual Net Sales of the Licensed Products	Royalty Rate
Net Sales occurring inside the U.S.	Aggregate annual global Net Sales of Licensed Products less than [***]	[***]
Net Sales occurring inside the U.S.	Aggregate annual global Net Sales of Licensed Products equal to or greater than [***] but less than [***]	[***]
Net Sales occurring inside the U.S.	Aggregate annual global Net Sales of Licensed Products equal to or greater than [***] but less than [***]	[***]
Net Sales occurring inside the U.S.	Aggregate annual global Net Sales of Licensed Products equal to or greater than [***]	[***]
Net Sales occurring outside the U.S.	Aggregate annual global Net Sales of Licensed Products less than [***]	[***]
Net Sales occurring outside the U.S.	Aggregate annual global Net Sales of Licensed Products equal to or greater than [***] but less than [***]	[***]
Net Sales occurring outside the U.S.	Aggregate annual global Net Sales of Licensed Products equal to or greater than [***] but less than [***]	[***]
Net Sales occurring outside the U.S.	Aggregate annual global Net Sales of Licensed Products equal to or greater than [***]	[***]

8.6.3 **Royalty Reduction**.

(a) **Valid Claim**. If, at the time a Licensed Product is sold in a country during the Royalty Term for such Licensed Product, there is no longer a Valid Claim that Covers such Licensed Product in such country, the Royalty rates provided in Section 8.6.2 above for the sale of such Licensed Product in such country will be reduced in such country by [***].

(b) **Biosimilar Competition**. If, on a country-by-country basis, one or more Third Parties commercializes one or more Biosimilar Products with respect to a Licensed Product in a country and the aggregate units of such Licensed Product sold in that country during any Calendar Quarter following introduction of such Biosimilar Products have fallen by at least:

(i) [***] in that country as compared to the average quarterly total aggregate units of such Licensed Products sold in such country during the [***] immediately prior to the Calendar Quarter in which such Biosimilar Products were first introduced, where unit volume sales will be identified and calculated based on relevant information published by IQVIA, any successor to IQVIA, or any other similar Third Party source reasonably agreed upon by the Parties, or, if unavailable, data obtained by TGTX from its Distributors and presented to Precision with sufficient detail to reasonably demonstrate its validity, then the Net Sales in such country used to calculate the Royalty payments due to Precision pursuant to Section 8.6.2 for such Licensed Product will be reduced by [***]; or

(ii) [***] in that country as compared to the average quarterly total aggregate units of such Licensed Products sold in such country during the last [***] immediately prior to the Calendar Quarter in which such Biosimilar Products were first introduced, where unit volume sales will be identified and calculated based on relevant information published by IQVIA, any successor to IQVIA, or any other similar Third Party source reasonably agreed upon by the Parties, or, if unavailable, data obtained by TGTX from its Distributors and presented to Precision with sufficient detail to reasonably demonstrate its validity, then the Net Sales in such country used to calculate the Royalty Payments due to Precision pursuant to Section 8.6.2 for such Licensed Product will be reduced by [***].

(c) **Third Party Licenses**. If TGTX obtains a license under Patents owned or controlled by a Third Party in a country that [***] any Licensed Product in the Licensed Field, then TGTX may offset against the Royalty payments due to Precision with respect to sales of such Licensed Product in such country an amount equal to [***] paid to such Third Party under such agreement in such country with respect to such sales.

(d) **Cumulative Effect of Royalty Reductions**. On a Licensed Product-by-Licensed Product and country-by-country basis, in no event will the royalty reductions for such Licensed Product permitted under subsections (a) to (c) of this Section 8.6.3, alone or together, reduce the Royalty payments due to Precision with respect to such Licensed Product pursuant to Section 8.6.2 in a country in a given Calendar Quarter by more than [***] of the applicable Royalty payments that would otherwise be owed on the Net Sales of such Licensed Product in such country.

8.7 **Payment; Reports**. Royalty payments due by TGTX to Precision under Section 8.6 shall be: (a) calculated and reported for each Calendar Quarter; (b) paid within [***] after the end of each Calendar Quarter; and (c) accompanied by a report setting forth, with respect to each Calendar Quarter, on a Licensed Product-by-Licensed Product and country-by-country basis: (i) Net Sales of the Licensed Product by the applicable Selling Party(ies) in the Territory, and (ii) a calculation of the Royalty due by TGTX to Precision on such Net Sales.

8.8 **Method of Payment; Currency Conversion**. Unless otherwise agreed by the Parties, all payments due under this Agreement shall be paid in Dollars by wire transfer or electronic funds transfer of immediately available funds to an account designated by the payee; *provided* however, that a Party shall only be required to disburse funds to the payee's jurisdiction of incorporation or to a jurisdiction in which the payee has a significant business presence. When conversion of payments from any currency other than Dollars is required, such Party's then-current standard exchange rate methodology will be employed for the translation of foreign currency sales into Dollars; *provided*, that this methodology is used by such Party in the translation of its foreign currency operating results, is consistent with U.S. GAAP or IFRS, as applicable, is audited by such Party's independent certified public accountants in connection with the audit of the consolidated financial statements of such Party, and is used for external reporting of foreign currency operating results.

8.9 **Records and Audits**. TGTX shall maintain complete and accurate records in sufficient detail to permit Precision to confirm the accuracy of Commercial Milestone Payments and Royalty payments payable under this Agreement. Upon reasonable prior notice, such records shall be open during regular business hours for a period of [***] from the creation of individual records, for examination at Precision's expense, and not more often than [***], by an independent certified public accountant selected by Precision and reasonably acceptable to TGTX for the sole purpose of verifying for Precision the accuracy of the financial statements or reports furnished by TGTX pursuant to this Agreement or of any payments made, or required to be made, by TGTX to Precision pursuant to this Agreement. No Calendar Quarter shall be subject to audit more than one time. Any such auditor shall not disclose TGTX's Confidential Proprietary Information to Precision, except to the extent such disclosure is necessary to verify the accuracy of the financial reports furnished by TGTX or the amount of payments due by TGTX under this Agreement. Any amounts shown to be owed but unpaid, or overpaid and in need of reimbursement, shall be paid or refunded (as the case may be) within [***] after the accountant's report, plus interest (as set forth in Section 8.10) from the original due date (unless challenged in good faith by TGTX, in which case any undisputed portion shall be paid in accordance with the foregoing timetable, any dispute with respect to such challenge shall be resolved in accordance with Section 14.2, and any remaining disputed portion shall be paid within [***] after resolution of the dispute). Precision shall bear the full cost of such audit unless such audit reveals an underpayment by TGTX during the applicable audit period, which underpayment was more than [***] of the amount set forth in such report, in which case TGTX shall bear the full cost of such audit.

8.10 **Late Payments**. If any payment properly due under this Agreement and not subject to a good faith dispute is not paid when due in accordance with the applicable provisions of this Agreement, the payment shall accrue interest from the date due at [***]. The payment of such interest shall not limit Precision from exercising any other rights it may have as a consequence of the lateness of any payment.

8.11 **Taxes**.

8.11.1 **Taxes on Income.** Each Party shall be solely responsible for the payment of all taxes imposed on its share of income arising directly or indirectly from the collaborative efforts of the Parties under this Agreement.

8.11.2 **Tax Cooperation.** The Parties agree to cooperate with one another and use reasonable efforts to avoid or reduce tax withholding or similar obligations in respect of any payments made by TGTX to Precision under this Agreement. Without limiting the generality of the foregoing, Precision shall provide TGTX any tax forms and other information that may be reasonably necessary in order for TGTX to not withhold tax or to withhold tax at a reduced rate under an applicable bilateral income tax treaty. Each Party shall provide the other with reasonable assistance to enable the recovery, as permitted by Applicable Law, of withholding taxes, value added taxes, or similar obligations resulting from payments made under this Agreement, such recovery to be for the benefit of the Party bearing such withholding tax or value added tax.

8.11.3 **Payment of Taxes.** To the extent TGTX is required by Applicable Law to deduct and withhold taxes on any payment to Precision, such amount shall be withheld or deducted from the payment to be made by TGTX and TGTX shall pay the amounts of such taxes to the proper Governmental Authority in a timely manner and promptly transmit to Precision an official tax certificate or other evidence of such withholding sufficient to enable Precision to claim such payment of taxes. For the avoidance of doubt, to the extent that any such amount is withheld or deducted by TGTX, such withheld or deducted amount shall be treated for all purposes of this Agreement as having been paid to Precision, and TGTX shall not increase any payment due to Precision under this Agreement for any such withholding or deduction.

8.11.4 **Treatment of Certain Withholding Taxes**. Notwithstanding anything to the contrary in Section 8.11.3, if TGTX is required to deduct and withhold taxes on any payment to Precision and such withholding obligation arises as a result of any action by TGTX that has the effect of modifying the tax treatment of the Parties (including any assignment or sublicense, any change of domicile, or any failure on the part of the paying Party to comply with Applicable Law or filing or record retention requirements) (a "***Withholding Tax Action***"), then the sum payable by TGTX (in respect of which such deduction or withholding is required to be made) shall be increased to the extent necessary to ensure that Precision actually receives, as appropriate, a sum equal to the sum that it would have received had no such Withholding Tax Action occurred. For clarity, this Section 8.11.4 does not apply with respect to taxes that TGTX includes in its calculation of Net Sales in accordance with U.S. GAAP. For the avoidance of doubt, TGTX shall not be required to increase any sum payable for any deduction or withholding obligation arising as a result of any action by Precision that has the effect of modifying the tax treatment of the Parties (including any assignment, any change of domicile, or any failure on the part of Precision to comply with Applicable Law or filing or record retention requirements), which action(s) shall not constitute a Withholding Tax Action.

8.12 **Blocked Currency.** In each country where the local currency is blocked and cannot be removed from the country, royalties accrued on Net Sales in that country shall be paid in the equivalent amount in Dollars.

8.13 **Manner and Place of Payment.** All payments (other than payments made by TGTX in TGTX Parent Consideration Shares) owed under this Agreement to Precision shall be made by wire transfer in immediately available funds to a bank and account designated in writing by Precision, unless otherwise specified in writing by Precision.

8.14 **TGTX Equity Issuances.** For purposes of determining the number of TGTX Parent Consideration Shares to be issued pursuant to Section 8.3 or 8.4, the value of such shares shall be based on the thirty (30) Trading Day VWAP of the TGTX Parent Common Stock immediately prior to the date on which the corresponding Milestone Event is achieved. In the event that TGTX elects to make any portion of an applicable milestone payment with a combination of cash and TGTX Parent Consideration Shares, TGTX and TGTX Parent shall satisfy and comply with each of the following obligations, and if any of the following obligations are and have not been satisfied as of each applicable payment date, TGTX shall be required to pay the applicable milestone payment entirely in cash:

8.14.1 The representations and warranties made by Precision in Section 8.2.2 shall be made by each of TGTX and TGTX Parent, and the representations and warranties made by TGTX in Sections 8.2.3(a), (b) and (c) shall be made by Precision as of the Effective Date, in each case as if such representations and warranties were restated in this Section 8.14.1, *mutatis mutandis*, with the applicable references to "Precision" being replaced with references to "each of TGTX and TGTX Parent" (except with, for purposes of Section 8.2.2(c), the applicable references to "Precision" being replaced with reference to "TGTX Parent") and the applicable references to "TGTX" being replaced with references to "Precision"; *provided*, however, that references to "Precision" in "Precision Shares" and "Precision Common Stock" shall be replaced with "TGTX Parent"; and *provided*, further, for the avoidance of doubt, Precision shall be entitled to (and does not make any representations or warranties that it will not) immediately sell any TGTX Parent Consideration Shares upon issuance;

8.14.2 the representations and warranties described in Section 8.14.1 that are made by TGTX and TGTX Parent shall be deemed to be made as of, and accurate on, each date that TGTX Parent issues TGTX Parent Consideration Shares to Precision in accordance with this Agreement;

8.14.3 the TGTX Parent Consideration Shares issued with respect to the applicable Milestone Event shall be freely and immediately tradable by Precision on Nasdaq;

8.14.4 TGTX Parent shall have taken, and shall take, all appropriate actions to comply with applicable securities laws and regulations and Nasdaq listing requirements to enable the immediate and continuous sale of the TGTX Parent Consideration Shares by Precision without restriction, including, at TGTX Parent's election, (a) obtaining an opinion from counsel to TGTX Parent or a no-action letter confirming that such shares, when issued, are not subject to any holding period or other restriction under Rule 144 or (b) filing and continuously maintaining the effectiveness of a registration statement registering the offer and sale of such shares under the Securities Act until all such shares may be sold by Precision under Rule 144 free of any restrictions; and

8.14.5 the covenants made by TGTX and Precision in Sections 8.2.7 and 8.2.8 shall be covenanted and agreed to by Precision and TGTX, respectively, as if such covenants were restated in this Section 8.14.5, *mutatis mutandis*, with the applicable references to "Precision" being replaced with references to "TGTX" or "TGTX Parent," as appropriate, the applicable references to "TGTX" being replaced with references to "Precision," and the applicable cross-references updated accordingly in the context of the restatement of such covenants in this Section 8.14.5.

ARTICLE 9

INTELLECTUAL PROPERTY

9.1 **Ownership of Intellectual Property**.

9.1.1 **Background IP**. As between the Parties, and subject to the licenses granted under this Agreement (a) TGTX shall solely own (or retain ownership of) all rights, title and interests in and to the TGTX Background IP, and (b) Precision shall solely own (or retain ownership of) all rights, title and interests in and to the Precision Background IP. If any Third Party becomes an Acquirer of a Party after the Effective Date pursuant to a Change of Control of such Party, any Patents and Know-How Controlled by the Acquirer before the relevant Change of Control transaction or thereafter during the Term will not be considered part of the Precision Background IP (where Precision is the acquired Party) or TGTX Background IP (where TGTX is the acquired Party); *provided*, however, that any Patents or Know-How that would otherwise constitute Precision Background IP or TGTX Background IP, as applicable, and are discovered or created by or on behalf of the Acquirer after the relevant Change of Control transaction in connection with activities under this Agreement, will be considered part of the Precision Background IP or TGTX Background IP, accordingly.

9.1.2 **Inventions**. Ownership of Inventions arising under this Agreement shall be as follows:

(a) TGTX shall solely own (or retain ownership of) all Inventions discovered, created, acquired, conceived or reduced to practice, solely by or on behalf of TGTX or any of its Affiliates in the course of performing activities under this Agreement, except to the extent constituting Precision Sole IP ("***TGTX Sole IP***").

(b) Precision shall solely own (or retain ownership of) (i) all Inventions discovered, created, acquired, conceived or reduced to practice, solely by or on behalf of Precision or any of its Affiliates in the course of performing activities under this Agreement, and (ii) all Inventions that relate to the [***], whether discovered, created, conceived or reduced to practice by or on behalf of TGTX or Precision or any of their respective Affiliates in the course of performing activities under this Agreement ("***Precision Sole IP***"). TGTX agrees to assign and hereby assigns to Precision all of its and its Affiliates' right, title and interests in and to the Precision Sole IP and agrees to execute such documents and perform such other acts as Precision may reasonably request to obtain, perfect and enforce the Precision Sole IP and the assignment thereof.

(c) Except to the extent constituting Precision Sole IP, any Invention discovered, created, conceived, reduced to practice or acquired, jointly by or on behalf of the Parties in the course of performing activities under this Agreement ("***Joint IP***"), will be jointly owned by the Parties.

9.1.3 **Inventorship**. Inventorship as between the Parties will be determined in accordance with U.S. patent laws. All such determinations shall be documented to ensure that the Patent claims in any divisional or continuation patent applications reflect appropriate inventorship.

9.1.4 **Rights of Joint Owners**. Subject to the licenses granted hereunder and the payment obligations under Article 8, each Party shall have full rights to exploit and license Joint IP (and any Patents therein), without any obligation or requirement of an accounting to the other Party.

9.1.5 **Independent Development**. Subject to the licenses granted hereunder, nothing in this Agreement shall be construed as limiting either TGTX's or Precision's right to Develop and in-license technology related to the TGTX Background IP (in the case of TGTX) or Precision Background IP (in the case of Precision) outside the scope of this Agreement in its ordinary course of business.

9.1.6 **Assignment Obligation**. Each Party shall cause all of its Affiliates, directors, officers, employees, agents, independent contractors, Sublicensees, consultants, and others who perform activities for such Party under this Agreement (each, a "***Representative***") to be under an appropriate obligation of confidentiality and non-use consistent with the provisions of this Agreement and an obligation to assign (or, if such Party is unable to cause such person or entity to agree to such assignment obligation despite such Party using reasonable efforts to negotiate such assignment obligation, provide a license, preferably exclusive, under) to such Party their rights in and to any Inventions and all intellectual property rights therein such that the Party is able to comply with its obligations under this Agreement as if such Invention had been discovered, created, acquired, conceived or reduced to practice by such Party, except where Applicable Law requires otherwise and except in the case of governmental, not-for-profit and public institutions that have standard policies against such an assignment (in which case a Party shall obtain a suitable license, preferably exclusive, or right to obtain such a license). Each Party shall use reasonable efforts to promptly disclose to the other Party in writing all Inventions arising under this Agreement that are owned by the other Party, including any invention disclosures, or other similar documents, submitted to it by its Representatives describing such Inventions, and all information relating to such Inventions to the extent necessary or useful for the preparation, filing and maintenance of any Patent with respect to such Invention.

9.2 **Patent Prosecution and Maintenance**.

9.2.1 **Rights to Prosecute and Maintain Patents**. As between the Parties:

(a) TGTX has the sole right, but not the obligation, to Prosecute and Maintain any Patents constituting or claiming any TGTX Background IP or TGTX Sole IP, at TGTX's sole cost and expense.

(b) Precision (or Precision's designee, as applicable) has the first right, but not the obligation, to Prosecute and Maintain any Patents constituting or claiming any Precision Background IP or Precision Sole IP, at Precision's (or its designee's, as applicable) sole cost and expense. Precision will give TGTX the opportunity to review (i) the text of any Precision Product-Specific Claim and (ii) responses to office actions related thereto, in each case, before filing of the relevant application or responding to such office action. Precision will reasonably consider any input or feedback from TGTX with respect to the foregoing, *provided*, that Precision shall have the final authority with respect to any such decisions. In the event that Precision (or Precision's designee, as applicable) elects not to conduct a Patent Defense Matter with respect to a Precision Patent, Precision may, in Precision's sole discretion, elect to permit TGTX to conduct such Patent Defense Matter, at TGTX's sole cost and expense. In the event that Precision elects in writing to permit TGTX to conduct a Patent Defense Matter with respect to any Precision Patent, TGTX shall keep Precision reasonably informed of the status of such Patent Defense Matter and shall consider in good faith Precision's comments thereon. TGTX shall provide Precision with drafts of all material papers and statements to be filed in connection with such Patent Defense Matter in sufficient time to allow Precision to review, consider and substantively comment thereon, and shall in good faith consider all reasonable comments thereto by Precision before filing such papers or statements. Precision may, at its own expense, join as a party to such Patent Defense Matter and be represented in any such action by counsel of its own choice.

(c) TGTX has the first right, but not the obligation, to Prosecute and Maintain any Patents constituting or claiming any Joint IP, at TGTX's sole cost and expense, and Precision shall have the secondary right, at Precision's sole cost and expense, to Prosecute and Maintain any Patents constituting or claiming any Joint IP, subject to and in accordance with Section 9.2.2.

(d) TGTX acknowledges and agrees that Precision has no rights or responsibility for preparing, filing, Prosecuting or Maintaining the Cellectis Patents. For clarity, TGTX shall have no rights with respect to preparing, filing Prosecuting or Maintaining the Cellectis Patents.

9.2.2 **Prosecution and Maintenance Procedures for Joint IP**. The Party handling the Prosecution and Maintenance of a Patent claiming or constituting Joint IP under Section 9.2.1(c) (the "***Prosecuting Party***") shall keep the other Party reasonably informed of the status of the applicable Patent and shall promptly provide the other Party with all material correspondence received from any patent authority in connection therewith. In addition, the Prosecuting Party shall promptly provide the other Party with drafts of all proposed material filings and correspondence to any patent authority with respect to the applicable Patent for the other Party's review and comment prior to the submission of such proposed filings and correspondences, and the Prosecuting Party shall consider the other Party's reasonable comments in good faith. The Prosecuting Party shall notify the other Party of its intention to suspend or cease any Prosecution and Maintenance of any such Patent. The Prosecuting Party shall provide such notice at least [***] prior to any filing or payment due date, or any other due date that requires action, in connection with such Patent. In such event, the Prosecuting Party shall permit the other Party, at the other Party's discretion and at its sole expense, to continue Prosecution and Maintenance of such Patent.

9.2.3 **Separation of Patent Claims**.

(a) If a Party determines that an application for a Patent filed, or sought to be filed, by the other Party claims [***], then the Parties agree that, to the extent practicable, such application shall be divided into two (2) or more Patent applications, so that each application shall contain claims that cover only [***].

(b) If the division contemplated in Section 9.2.3(a) is not practicable, or a single claim covers [***], then such Patent application shall be subject to the provisions of this Agreement relating to [***].

(c) Similarly, an attempt shall be made to divide Patent applications into those that claim Inventions [***].

9.2.4 **Cooperation of the Parties**. Each Party shall, at the other Party's reasonable request, cooperate with the other Party in the Prosecution and Maintenance of Patents under this Section 9.2 at [***] cost (except as expressly set forth otherwise in this Article 9), including by: (a) executing all papers and instruments, or requiring its Representatives, to execute such papers and instruments, to enable the other Party to apply for and to Prosecute and Maintain such Patents in any country as permitted by this Section 9.2; and (b) promptly informing the other Party of any matters coming to such Party's attention that may affect the Prosecution and Maintenance of any such Patents. [***]. Each Party will use reasonable efforts via good faith consultation with the other to avoid creating potential issues in Prosecution and Maintenance of Patents under this Section 9.2.

9.2.5 **Patent Working Group**. Each Party shall designate to the other Party in writing a patent Prosecution and Maintenance representative to liaise with the other Party's patent Prosecution and Maintenance representative with respect to the Prosecution and Maintenance of Patents under this Section 9.2; such representatives will meet no less frequently than quarterly during the Term, by means of teleconference, Internet conference, videoconference, or other similar communication method, to discuss matters relevant to the Prosecution and Maintenance of Patents under this Section 9.2, including timing of planned filings and other upcoming Prosecution and Maintenance actions. Each Party may update its patent Prosecution and Maintenance representative at any time upon written notice to the other Party.

9.3 **Infringement or Misappropriation by Third Parties**.

9.3.1 **Notice**. Each Party shall notify the other within [ten (10) Business Days] of becoming aware of any alleged or threatened infringement by a Third Party of any of the Precision Patents or Joint Patents, in each case in the Licensed Field in the Territory, and any related declaratory judgment, opposition, or similar action alleging the invalidity, unenforceability or non-infringement of any of the Precision Patents or Joint Patents (collectively "***Infringement***").

9.3.2 **Joint IP and Precision Product Patents**.

(a) As between the Parties, TGTX has the first right, but not the obligation, to bring and control any legal action, at [***] cost and expense, in connection with (i) any Infringement of any [***] or (ii) any Infringement of any Joint IP (other than any [***]) that is competitive with the Licensed Product. TGTX shall keep Precision reasonably informed of the status of such enforcement efforts for such Joint IP or [***] and shall consider in good faith Precision's comments thereon. TGTX shall provide Precision with drafts of all material papers and statements to be filed with the court in sufficient time to allow Precision to review, consider and substantively comment thereon, and shall in good faith consider all reasonable comments thereto by Precision before filing such papers or statements. Precision may, at [***] expense, join as a party to such claim, suit, or proceeding and be represented in any such action by counsel of its own choice. If TGTX does not bring such legal action within [***] after the notice provided pursuant to Section 9.3.1 (or within such shorter period prior to the next deadline for any action that must be taken in order to bring such legal action), Precision may bring and control any legal action in connection with such Infringement, at [***] cost and expense as it reasonably determines appropriate so long as TGTX does not reasonably object to such action.

(b) As between the Parties, Precision shall have the first right, but not the obligation, to bring and control any legal action, at [***] cost and expense, in connection with any Infringement of any Joint IP (other than any Infringement described in Section 9.3.2(a)). Precision shall keep TGTX reasonably informed of the status of such enforcement efforts for such Joint IP and shall consider in good faith TGTX's comments thereon. Precision shall provide TGTX with drafts of all material papers and statements to be filed with the court in sufficient time to allow TGTX to review, consider and substantively comment thereon, and shall in good faith consider all reasonable comments thereto by TGTX before filing such papers or statements. TGTX may, at its own expense, join as a party to such claim, suit, or proceeding and be represented in any such action by counsel of its own choice. If Precision does not bring such legal action within [***] after the notice provided pursuant to Section 9.3.1, TGTX may bring and control any legal action in connection with such Infringement, at [***] cost and expense as it reasonably determines appropriate.

9.3.3 **Precision Background IP and Precision Sole IP**. Except as set forth in Section 9.3.2(a), as between the Parties, Precision has the sole right to initiate any proceedings or take other appropriate actions against an infringement of any Precision Background IP or Precision Sole IP and to defend against any challenge of any Precision Background IP or Precision Sole IP that are brought by a Third Party in connection with such infringement. TGTX acknowledges and agrees that (a) Precision has no rights or responsibility for enforcing the Cellectis Patents, and therefore all references to Precision Background IP in this Section 9.3 shall be deemed to exclude the Cellectis Patents for all purposes, (b) prior to initiating enforcement actions against a Third Party with respect to certain Precision Patents which are subject to the non-exclusive license granted by Precision to Cellectis S.A. pursuant to the Cellectis Agreement, Precision is required by the Cellectis Agreement to confirm that Cellectis S.A. has not granted a license to such Third Party under such Precision Patents, and TGTX will cooperate with Precision in taking such actions as required by the Cellectis Agreement, and (c) Duke retains discretion as to whether to become a party plaintiff and has certain rights with respect to enforcement of Patents contained within the Duke IP in the event Precision does not enforce such Patents.

9.3.4 **TGTX Background IP and TGTX Sole IP**. TGTX has the sole right to initiate any proceedings or take other appropriate actions against an infringement of any TGTX Background IP or TGTX Sole IP and to defend against any challenge of any TGTX Background IP or TGTX Sole IP that are brought by a Third Party in connection with such infringement.

9.3.5 **Allocation of Recoveries**. Any recoveries resulting from enforcement action relating to a claim of Infringement shall be [***].

9.3.6 **Cooperation**. At the request and expense of the Party bringing an action under this Section 9.3, the other Party shall provide reasonable assistance in connection therewith, including by executing reasonably appropriate documents, cooperating in discovery and joining as a party to the action if required by Applicable Law to pursue such action. In connection with any such enforcement action, the Party bringing the action shall not enter into any settlement admitting the invalidity or non-infringement of, or otherwise impairing the other Party's rights in the applicable Patents without the prior written consent of the other Party.

9.4 **Defense and Settlement of Third Party Claims**. Each Party shall promptly notify the other in writing of: (a) any allegation by a Third Party that the activity of either of the Parties pursuant to this Agreement infringes or may infringe the intellectual property rights of such Third Party; or (b) any declaratory judgment action that is brought naming either Party as a defendant and alleging invalidity of any of the Precision Patents, or Joint Patents. Precision has the sole right to control any defense of any such claim described in (a) involving alleged infringement of Third Party rights by Precision's activities at [***] expense and by counsel of its own choice, and TGTX may, at [***] expense, be represented in any such action by counsel of its own choice. TGTX has the sole right to control any defense of any such claim described in (a) involving alleged infringement of Third Party rights by TGTX's activities at [***] expense and by counsel of its own choice, and Precision may, at [***] expense, be represented in any such action by counsel of its own choice. Neither Party may settle any patent infringement litigation under this Section 9.4 in a manner that admits the invalidity or unenforceability of the other Party's Patents or a Joint Patent or imposes on the other Party restrictions or obligations or other liabilities, without the written consent of such other Party, which consent shall not be unreasonably withheld, conditioned, or delayed. Nothing in this Section 9.4 will limit any indemnification rights or obligations of a Party under Article 11.

9.5 **Patent Extension**. The Parties shall cooperate in determining whether a Joint Patent claiming or covering a Licensed Product should be extended, and thereafter the Parties shall cooperate in obtaining patent term restorations, supplemental protection certificates or their equivalents, and other forms of patent term extensions for a given Licensed Product with respect to any applicable Joint Patent in any country or region where applicable. Precision shall have final decision-making authority with respect to decisions regarding patent term extensions for Precision Patents. TGTX shall have final decision-making authority with respect to decisions regarding patent term extensions for TGTX Patents.

9.6 **CREATE Act**. It is the Parties' intention that this Agreement is a "joint research agreement" as that phrase is defined in 35 U.S.C. § 102(c) as amended by the Cooperative Research and Technology Enhancement (CREATE) Act, including the provisions of 35 U.S.C. § 102(b)(2)(c). The Parties agree to cooperate and to take reasonable actions to maximize the protections available for the Licensed ARCUS Nuclease and Licensed Products under such safe harbor provisions.

9.7 **Licenses to Third Party Intellectual Property Rights**. If (a) a Party becomes aware of any Patent of a Third Party that (i) claims or embodies the Licensed ARCUS Nuclease or ARCUS Technology as a composition of matter, or a method of making or using the Licensed ARCUS Nuclease or ARCUS Technology and (ii) is not the subject of an agreement with a Party as of or prior to the Effective Date; then (b) such Party shall notify the other in writing, identifying the relevant Patent. Precision shall have the first right (but not the obligation) to negotiate and obtain a license from such Third Party under such Patent described under a notice described in the foregoing (a) for a period of [***] following the date of such notice.

9.8 **Licensed Product Trademarks**. TGTX shall have the right to select, and the right to use and to register in any trademark office in the Territory, any trademark for use with the Licensed Product (the "***Licensed Product Trademarks***"); *provided* that TGTX shall not use, file applications for, or register any trademarks owned by Precision (or its Affiliates or licensees), or that are confusingly similar thereto, whether stand-alone or in combination with a design element, for the benefit of branding (including co-branding) without the prior written consent of Precision. As between the Parties, TGTX shall own all right, title and interest in and to any such Licensed Product Trademarks adopted by TGTX for use with a Licensed Product, and is responsible for the registration, filing, maintenance and enforcement thereof.

ARTICLE 10

REPRESENTATIONS, WARRANTIES AND COVENANTS

10.1 **Mutual Representations and Warranties**. Each of TGTX and Precision represent and warrant that, as of the Effective Date:

10.1.1 it is duly organized and validly existing under in the Applicable Laws of the jurisdiction of its incorporation or formation, as applicable, has full corporate, limited liability company or other power and authority, as applicable, to enter into this Agreement and to carry out the provisions hereof, and has sufficient facilities, experienced personnel or other capabilities (including via Affiliates and/or Third Parties) to enable it to perform its obligations under this Agreement;

10.1.2 it is duly authorized to execute and deliver this Agreement and to perform its obligations hereunder, and the individual executing this Agreement on its behalf has been duly authorized to do so by all requisite corporate, limited liability company or other action, as applicable; and

10.1.3 this Agreement is legally binding upon it and enforceable in accordance with its terms (except as the enforceability thereof may be limited by bankruptcy, bank moratorium or similar laws affecting creditors' rights generally and laws restricting the availability of equitable remedies and may be subject to general principles of equity whether or not such enforceability is considered in a proceeding at law or in equity) and the execution, delivery and performance of this Agreement by it have been duly authorized by all necessary corporate action and do not and will not: (a) conflict with, or constitute a default or result in a breach under, any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound, or violate any Applicable Law; or (b) require any consent or approval of its stockholders or similar.

10.2 **Precision Representations and Warranties**. Precision represents and warrants to TGTX that, as of the Effective Date:

10.2.1 **No Grants that Conflict with this Agreement**. Precision and its Affiliates have not granted any rights (or other encumbrances) to any Third Party under Precision Technology that conflict with the rights granted to TGTX hereunder.

10.2.2 **Existing Patents**.

(a) All Precision Patents Covering the Licensed Product or the Licensed ARCUS Nuclease that exist as of the Effective Date, other than the Cellectis Patents, that are issued or subject to a pending application for issuance are listed on Exhibit 10.2.2 (the "***Existing Patents***").

(b) The Existing Patents and the Cellectis Patents represent all Patents Controlled by Precision that Cover the Licensed Product, the Licensed ARCUS Nuclease, or the Exploitation of any of the foregoing in the Licensed Field.

(c) All Existing Patents are: (i) to the extent issued (unless otherwise indicated on Exhibit 10.2.2), subsisting and, to Precision's Knowledge, not invalid or unenforceable, in whole or in part, or to Precision's Knowledge, confer a valid right to claim priority thereto; (ii) solely and exclusively owned or exclusively licensed to Precision, free of any encumbrance, lien or claim of ownership by any Third Party; (iii) in respect of Existing Patents owned by Precision, to the extent subject to a pending application for issuance, being prosecuted in good faith in the respective patent offices in which such applications have been filed in accordance with Applicable Law and, to Precision's Knowledge, all material references, documents and information have been presented to the relevant patent office in respect of such Existing Patents to the extent required by such patent office; (iv) in respect of Existing Patents owned by Precision, filed and maintained in accordance with applicable Patent office rules, and all applicable fees applicable thereto have been paid on or before any final due date for payment; and (v) in respect of Existing Patents owned by Precision, all Representatives of Precision who have performed any activities on its behalf in connection with the inventions claimed in the Existing Patents have assigned to Precision the whole of their rights in any intellectual property rights thereto conceived or reduced to practice by them, and no such Representative has any rights to any such Existing Patents.

(d) [***].

10.2.3 **[***]**.

10.2.4 **[***]**.

10.2.5 **Other Material Claims and Actions**. There are no claims, actions, or proceedings pending or, to Precision's Knowledge, threatened by any Third Party against Precision or its properties, assets or business, which if adversely decided, would, individually or in the aggregate, have a material adverse effect on, or prevent Precision's ability to grant the licenses or rights granted to TGTX under this Agreement.

10.2.6 **No Government Funding**. Except with respect to the Duke IP, the Inventions claimed or covered by the Precision Patents: (a) were not conceived, discovered, developed or otherwise made in connection with any research activities funded, in whole or in part, by the federal government of the United States of America or any agency thereof; (b) are not a "subject invention" as that term is described in 35 U.S.C. Section 201(e) and (c) are not otherwise subject to the provisions of the Patent and Trademark Law Amendments Act of 1980, as amended, codified at 35 U.S.C. §§ 200-212, as amended, as well as any regulations promulgated pursuant thereto, including in 37 C.F.R. Part 401 (the "***Bayh-Dole Act***").

10.2.7 **Regulatory Compliance of the Batch**. The batch of released Clinical Trial material to be delivered pursuant to Section 6.2.1 at the time of delivery to TGTX by Precision: [***].

10.2.8 **Manufacturing Facilities**. To Precision's Knowledge, all facilities used by Precision in connection with the Manufacture of the Licensed Product, including batch number PBCAR0191-2023-0006, are in good operating condition and repair, were designed to be capable to and were utilized by Precision to Manufacture the Licensed Product [***]. To Precision's Knowledge, no inspection of such facilities has resulted in any warning letter, notice of violation letter or other notice, response or commitment made to or with the FDA or any other Governmental Authority.

10.3 **TGTX Representations and Warranties**. TGTX represents and warrants to Precision that, as of the Effective Date, TGTX and its Affiliates have not granted any rights (or other encumbrances) to any Third Party under TGTX Arising IP or TGTX Background IP that conflict with the rights granted to Precision hereunder.

10.4 **Mutual Covenants**.

10.4.1 **Debarment**. Each Party represents and warrants to the other Party that such Party has not, and its Representatives have not been: (a) debarred or disqualified under the U.S. Federal Food, Drug and Cosmetic Act; (b) listed by any government or regulatory agencies as ineligible to participate in any government healthcare programs or government procurement or non-procurement programs (as that term is defined in 42 U.S.C. § 1320a-7b(f)), or excluded, debarred, suspended or otherwise made ineligible to participate in any such program; or (c) convicted of a criminal offense related to the provision of healthcare items or services, or is subject to any such pending action. Each Party will not during the Term knowingly, employ or use, directly or indirectly, including through Affiliates the services of any such person. In the event that either Party becomes aware of the debarment or disqualification or threatened debarment or disqualification of any person providing services to such Party, directly or indirectly, including through Affiliates or Sublicensees, which directly or indirectly relate to activities contemplated by this Agreement, such Party shall promptly notify the other Party in writing and such Party shall cease employing, contracting with, or retaining any such person to perform any such services.

10.4.2 **Protection of Information**. Each Party agrees that during the Term of this Agreement, and without limiting its obligations hereunder, such Party shall implement technical and organizational measures to protect all information under the Agreement that are appropriate and that provide no less protection than both (a) good industry practice (i.e., in accordance with ISO 27001 and/or similar industry standards) and (b) such Party's measures to protect its own information of a similar nature or importance.

10.5 **Precision Covenant**. Precision covenants and agrees that during the Term: (1) it shall satisfy all of its obligations under (including making all payments), and take all steps to maintain in full force and effect, the Existing In-License Agreements; (2) it will not assign (except an assignment to a party to which this Agreement has been assigned as permitted under Section 15.7), amend, restate, amend and restate, terminate in whole or in part, or otherwise modify an Existing In-License Agreement in any manner that limits TGTX's exercise of the rights granted in this Agreement without the prior written consent of TGTX; and (3) it will provide TGTX with prompt notice of any claim of a breach under an Existing In-License Agreement made by either Precision or Duke or Cellectis S.A., as applicable. Notwithstanding anything herein to the contrary, Precision may, at any time, create a security interest in, pledge or assign, all or any portion of its rights under and interest in the Existing In-License Agreements in favor of any senior secured creditor of Precision, and such senior secured creditor may enforce such pledge or security interest in any manner permitted under applicable law; provided, however, that any such security interest, pledge, or assignment by Precision of all or any portion of its rights under and interest in the Existing In-License Agreements shall not diminish or impair the rights of TGTX under this Agreement.

10.6 **Compliance**.

10.6.1 **Compliance with Applicable Laws**. Each Party covenants to the other that in the performance of its obligations under this Agreement, such Party shall comply with, and shall cause its Affiliates and its and its Affiliates' employees and contractors to comply with, all Applicable Laws. No Party shall, or shall be required to, undertake any activity under or in connection with this Agreement which violates, or which it believes, in good faith, may violate, any Applicable Laws.

10.6.2 **Compliance with Internal Compliance Codes**. All Internal Compliance Codes shall apply only to the Party to which they relate. The Parties agree to cooperate with each other to help ensure that each Party is able to comply with the substance of its respective Internal Compliance Codes and, to the extent practicable, each Party shall operate in a manner consistent with its Internal Compliance Codes applicable to its performance under this Agreement. "***Internal Compliance Codes***," as used in this Section 10.6.2, means a Party's internal policies and procedures intended to ensure that a Party complies with Applicable Laws and such Party's internal ethical, medical and similar standards.

10.6.3 **Compliance with Anti-Corruption Laws**. In connection with this Agreement, the Parties shall comply with all applicable local, national, and international laws, regulations, and industry codes dealing with government procurement, conflicts of interest, corruption or bribery, including, if applicable, the U.S. Foreign Corrupt Practices Act of 1977, as amended, and any laws enacted to implement the Organization of Economic Cooperation and Development Convention on Combating Bribery of Foreign Officials in International Business Transactions.

10.6.4 **Prohibited Conduct**. Without limiting the other obligations of the Parties set forth in this Section 10.6, each Party covenants to the other that, as of the Effective Date and in the performance of its obligations under this Agreement through the expiration and termination of this Agreement, such Party and, to its knowledge, its Affiliates and its and its Affiliates' Representatives, in connection with the performance of their respective obligations under this Agreement, have not made, offered, given, promised to give, or authorized, and will not make, offer, give, promise to give, or authorize, any bribe, kickback, payment or transfer of anything of value, directly or indirectly through Third Parties, to any Government Official for the purpose of: (a) improperly influencing any act or decision of the Person or Government Official; (b) inducing the Person or Government Official to do or omit to do an act in violation of a lawful or otherwise required duty; (c) securing any improper advantage; or (d) inducing the Person or Government Official to improperly influence the act or decision of any organization, including any government or government instrumentality, to assist any Party in obtaining or retaining business. For the purpose of this Section 10.6.4, "***Government Official***" means: (x) any officer, employee (including physicians, hospital administrators, or other healthcare professionals), agent, representative, department, agency, de facto official, representative, corporate entity, instrumentality or subdivision of any government, military or international organization, including any ministry or department of health or any state-owned or affiliated company or hospital; (y) any candidate for political office, any political party or any official of a political party, in each case for the purpose of obtaining or retaining business for or with, or directing business to, any Person, including either Party; or (z) any Person acting in an official capacity on behalf of any of the foregoing.

10.7 **Disclaimer**. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS ARTICLE 10 AND IN SECTIONS 8.2.2, 8.2.3, AND 8.14, NEITHER PARTY MAKES ANY REPRESENTATIONS OR EXTENDS ANY WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, QUALITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR VALIDITY OF PATENT CLAIMS OR THE AVAILABILITY OF ANY LICENSES WITH RESPECT TO INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES. NOTHING IN THIS AGREEMENT SHALL BE CONSTRUED AS A REPRESENTATION MADE OR WARRANTY GIVEN BY EITHER PARTY THAT EITHER PARTY WILL BE SUCCESSFUL IN OBTAINING ANY PATENTS OR THAT ANY PATENTS WILL ISSUE BASED ON A PENDING APPLICATION. WITHOUT LIMITING THE RESPECTIVE RIGHTS AND OBLIGATIONS OF THE PARTIES EXPRESSLY SET FORTH HEREIN, EACH PARTY SPECIFICALLY DISCLAIMS ANY GUARANTEE THAT ANY LICENSED PRODUCTS, INCLUDING THE RESEARCH, MANUFACTURE, DEVELOPMENT OR COMMERCIALIZATION THEREOF, WILL BE SUCCESSFUL, IN WHOLE OR IN PART.

ARTICLE 11

INDEMNIFICATION

11.1 **Indemnity**.

11.1.1 **By Precision**. Precision shall defend, indemnify and hold harmless TGTX and its Affiliates, and their respective Representatives (each, a "***TGTX Indemnitee***") from and against any and all costs, fees, expenses, losses, liabilities, and damages, including reasonable legal expenses and attorneys' fees (collectively, "***Losses***") to which any TGTX Indemnitee may become subject as a result of any claim, demand, action or other proceeding by any Third Party (a "***Claim***") to the extent such Losses arise out of: (a) the gross negligence or willful misconduct of Precision or its Affiliates in connection with its activities under this Agreement; (b) the breach of this Agreement or the representations, warranties, and covenants made hereunder by Precision; except, in each case, to the extent such Losses result from matters subject to clause (a), (b) or (c) of Section 11.1.2.

11.1.2 **By TGTX**. TGTX shall defend, indemnify and hold harmless Precision, its Affiliates, Duke, and its and their respective Representatives (each, a "***Precision Indemnitee***") from and against any and all Losses to which any Precision Indemnitee may become subject as a result of any Claim to the extent such Losses arise out of: (a) the gross negligence or willful misconduct of TGTX, its Affiliates, or its or their respective Sublicensees in connection with its activities under this Agreement; (b) the breach of this Agreement or the representations, warranties and covenants made hereunder by TGTX; or (c) [***]; except, in each case, to the extent such Losses result from matters subject to clause (a) or (b) of Section 11.1.1.

11.1.3 **Procedure**. A Party that intends to claim indemnification under this Article 11 (the "***Indemnitee***") shall promptly notify the Indemnitor (the "***Indemnitor***") in writing of any Claim in respect of which the Indemnitee intends to claim such indemnification. The failure to deliver written notice to the Indemnitor within a reasonable time after the commencement of any action with respect to a Claim shall only relieve the Indemnitor of its indemnification obligations under this Article 11 if and to the extent the Indemnitor is actually and materially prejudiced thereby. The Indemnitor has sole control of the defense or settlement thereof. The Indemnitee shall cooperate fully with the Indemnitor and its legal representatives in the investigation of any action with respect to a Claim covered by this indemnification. The Indemnitee may participate at its expense in the Indemnitor's defense of and settlement negotiations for any Claim with counsel of the Indemnitee's own selection. The Indemnitor shall not settle any Claim in a manner that admits liability of Indemnitee or requires Indemnitee to perform any material obligations (other than payment of money which will be fully satisfied by Indemnitor) without the prior written consent of the Indemnitee, not to be unreasonably withheld, conditioned or delayed. So long as the Indemnitor is actively engaged in activities relating to defending or settling the Claim in good faith, the Indemnitee shall not settle or compromise any such Claim without the prior written consent of the Indemnitor. If the Indemnitor does assume activities in furtherance of the defense and settlement of a Claim as provided above within [***] after written notice from Indemnitee stating intent of the Indemnitor to undertake such activities if Indemnitor does not: (a) the Indemnitee may defend against, consent to the entry of any judgment, or enter into any settlement with respect to such Claim in any manner the Indemnitee may deem reasonably appropriate (and the Indemnitee need not consult with, or obtain any consent from, the Indemnitor in connection therewith); and (b) the Indemnitor shall remain responsible to indemnify the Indemnitee as provided in this Article 11.

11.2 **Insurance**. Each Party, at its own expense, shall maintain product liability and other appropriate insurance (or self-insure) in an amount consistent with sound business practice and reasonable in light of its obligations under this Agreement during the Term and for a period of [***] thereafter or for otherwise longer as may be required by Applicable Law; but in any event, and without limiting the foregoing, no later than Initiation of the first Clinical Trial for a Licensed Product, TGTX shall procure and maintain product liability insurance in an amount not less than [***] per occurrence and in the annual aggregate. Each Party shall provide a certificate of insurance (or evidence of self-insurance) evidencing such coverage to the other Party upon request. The Parties agree that such insurance shall not be construed to create a limit of either Party's liability with respect to its indemnification obligations under this Article 11 or other obligations under this Agreement.

ARTICLE 12

CONFIDENTIALITY

12.1 **Confidential Proprietary Information**.

12.1.1 **Confidential Proprietary Information**. In connection with this Agreement, each Party may disclose technical, business or other confidential information in connection with this Agreement, whether prior to, on, or after the Effective Date, including (a) any unpublished Patents, and (b) any information regarding the scientific, regulatory or business affairs or other activities of either Party; in each case ((a) and (b)) that is marked or identified at the time of disclosure as confidential or proprietary or is of such a nature that would be understood by a reasonable person to be confidential or proprietary (such confidential information, "***Confidential Proprietary Information***"). Without limiting the foregoing, the terms of this Agreement and all Joint IP are the Confidential Proprietary Information of both Parties and shall be treated confidentially by each of the Parties, subject to the exceptions set forth in this Section 12.1. [***]. Information exchanged by the Parties pursuant to the Confidentiality Agreement shall be treated as Confidential Proprietary Information under this Agreement and governed by the terms of this Agreement.

12.1.2 **Restrictions**. A Party (the "***Receiving Party***") that receives Confidential Proprietary Information from the other Party (the "***Disclosing Party***") shall keep all the Disclosing Party's Confidential Proprietary Information in confidence with the same degree of care with which the Receiving Party holds its own confidential information (but in no event less than a commercially reasonable degree of care), and will not disclose such Confidential Proprietary Information to any Person except as permitted under Section 12.1.4. A Receiving Party shall not use the Disclosing Party's Confidential Proprietary Information except in connection with the performance of its obligations and exercise of its rights under this Agreement.

12.1.3 **Exceptions**. The obligations of confidentiality and restriction on use of Confidential Proprietary Information under Section 12.1.2 do not apply to any information that the Receiving Party can prove by competent written evidence: (a) is now, or hereafter becomes, through no act or failure to act on the part of the Receiving Party, generally known or available to the public; (b) is known by the Receiving Party at the time of receiving such information, other than by previous disclosure of the Disclosing Party or its Affiliates or Representatives; (c) is hereafter furnished to the Receiving Party without restriction by a Third Party who has no obligation of confidentiality or limitations on use with respect thereto, as a matter of right; or (d) is independently discovered or developed by the Receiving Party without the use of or reference to Confidential Proprietary Information belonging to the Disclosing Party. Specific information shall not be deemed to be within any of the foregoing exclusions merely because it is embraced by more general information falling within those exclusions. Further, any combination of Confidential Proprietary Information shall not be deemed to be generally known, available to the public or known by the Receiving Party merely because individual elements of such Confidential Proprietary Information are subject to such exclusions unless the combination and its principles are subject to such exclusions.

12.1.4 **Permitted Disclosures**. The Receiving Party may disclose Confidential Proprietary Information belonging to the Disclosing Party as expressly permitted by this Agreement or if and to the extent such disclosure is reasonably necessary in the following instances:

(a) made by or on behalf of the Receiving Party to a Patent authority as may be reasonably necessary or useful for purposes of Prosecution and Maintenance of Patents as permitted by this Agreement; *provided*, that neither Party shall file a patent application that discloses TGTX Technology (for disclosures by Precision) or Precision Technology (for disclosures by TGTX) without the prior written consent of the other Party (such consent not to be unreasonably withheld, conditioned or delayed);

(b) made by or on behalf of the Receiving Party to Regulatory Authorities as necessary or reasonably useful in connection with any Regulatory Filings for a product that such Party has a license or right to develop in a given country or jurisdiction;

(c) made by or on behalf of the Receiving Party as may be necessary or reasonably useful for prosecuting or defending litigation as permitted by this Agreement;

(d) made by or on behalf of the Receiving Party for the purpose of complying with a valid order of a court of competent jurisdiction or other Governmental Authority of competent jurisdiction or, if in the opinion of the Receiving Party's legal counsel, such disclosure is otherwise required by Applicable Law;

(e) made by or on behalf of the Receiving Party where such disclosure is required by a Regulatory Authority (including in filings with the Securities and Exchange Commission or other agency) of certain material developments or material information generated under this Agreement; *provided* that, to the extent permitted, the Party seeking such disclosure first provides the other Party a copy of the proposed disclosure; and *provided*, further, that the receiving Party shall afford to the other Party an opportunity to review and comment, which period shall be no less than [***] (*provided* that if the applicable disclosure is required to be made within fewer than [***], then the receiving Party shall afford to the other Party a reasonable opportunity to review and comment consistent with such disclosure requirement), and the Receiving Party shall accept any reasonable comments so provided;

(f) made by or on behalf of Precision to Duke solely as and to the extent necessary to fulfill Precision's reporting obligations under the Duke Agreement as of the Effective Date so long as such information is disclosed subject to the confidentiality provisions of the Duke Agreement as of the Effective Date;

(g) made by or on behalf of the Receiving Party in response to a valid request by a U.S., state, foreign, provincial, or local tax authority, in which case either Party may disclose, a copy of this Agreement (including any Exhibits, Appendices, ancillary agreements, and amendments hereto);

(h) made by the Receiving Party to its and its Affiliates' Representatives, subcontractors, and to Sublicensees (in the case of TGTX) or licensees (in the case of Precision), in each case on a need-to-know basis (as reasonably determined by the Receiving Party) in connection with the Exploitation of the Licensed Product in the Territory, in each case under written obligations of confidentiality and non-use substantially consistent with those herein; and

(i) made by the Receiving Party to potential and actual investors, acquirers, licensees and other financial or commercial partners solely for the purpose of evaluating or carrying out an actual or potential investment, acquisition, or collaboration, in each case so long as such recipients are bound by confidentiality and non-use obligations at least as stringent as those herein; *provided*, however, that with respect to disclosure to actual or bona fide potential investors, such disclosure is under an obligation of confidentiality that is consistent with market terms, including a shorter period of time during which such information must be held confidential.

[***].

12.1.5 **Disclosure of Agreement**. Notwithstanding the foregoing in this Article 12, either Party or its Affiliates may disclose the relevant terms of this Agreement: (a) to the extent required or advisable to comply with the rules and regulations promulgated by the U.S. Securities and Exchange Commission or any equivalent governmental agency in any country in the Territory, *provided* that such Party shall (i) file a redacted form of this Agreement, if permitted, (ii) before filing, provide the redacted form of the agreement, if any, to the other Party for review and comment, and (iii) consider any comments by the other Party to the redacted form of the Agreement in good faith before filing; (b) upon request from a Governmental Authority (such as a tax authority), *provided* that the disclosing Party uses reasonable efforts to ensure the Governmental Authority maintains such terms as confidential; (c) to applicable licensors, to the extent necessary to comply with the terms of any Third Party license agreement, the rights under which are sublicensed to the other Party under this Agreement; and (d) to the extent necessary to perform obligations or exercise rights under this Agreement, to any sublicensee, collaborator or potential sublicensee or potential collaborator of such Party, *provided* that any sublicensee, collaborator or potential sublicensee or collaborator agree in writing to be bound by obligations of confidentiality and non-use no less protective of the Disclosing Party than those set forth in this Agreement.

12.1.6 **Survival**. Each Party's obligations under this Section 12.1 shall apply during the Term and continue for [***].

12.2 **Publicity**. Neither Party shall issue any press release or public statement disclosing information relating to this Agreement or the transactions contemplated hereby or the terms hereof without the prior written consent of the other Party, not to be unreasonably withheld, conditioned, or delayed; *provided* however, that (a) neither Party will be prevented from complying with any duty of disclosure it may have pursuant to Applicable Laws or pursuant to the rules or regulations of any applicable Governmental Authority, national securities exchange or quotation system, subject to the restrictions set forth in Sections 12.1.4 and 12.1.5; and (b) Precision will not be prevented from disclosing publicly the achievement of any Milestone Event and the receipt (and the amount) of any corresponding payment, *provided* that (i) TGTX shall have at least [***] to review and provide edits and comments to any public disclosure proposed by Precision under this Section 12.2(b) and (ii) Precision shall reasonably incorporate any edits and address any comments provided by TGTX in such proposed public disclosure. If either Party desires to issue a press release or other public statement disclosing information relating to this Agreement or the transactions contemplated hereby or the terms hereof, the issuing Party will provide the other Party with a copy of the proposed press release or public statement. The issuing Party shall specify with each such proposed press release or public statement, taking into account the urgency of the matter being disclosed, a reasonable period of time within which the Receiving Party may provide any comments on such proposed press release or public statement. If the reviewing Party provides any comments, the Parties shall consult with one another on such proposed press release or public statement and work in good faith to prepare a mutually acceptable press release or public statement. Each Party may repeat any information relating to this Agreement that has already been publicly disclosed in accordance with this Section 12.2, *provided* that such information continues as of such time to be accurate.

12.3 **Publication**. At least [***] before TGTX or its Affiliate makes any public disclosure (whether by oral presentation, poster, manuscript or abstract) or submits for publication of a proposed publication (such applicable period, the "***Review Period***") relating to any Clinical Trial data, non-clinical or preclinical data, or any associated results or conclusions specific to the Licensed Product or the Licensed ARCUS Nuclease that have not been previously publicly disclosed (collectively, a "***Publication***"), TGTX shall deliver a complete copy of the applicable proposed Publication to Precision. TGTX will provide Precision with a copy of such proposed Publication at least [***] prior to the earlier of its presentation or intended submission for publication. TGTX agrees that it will not submit or present any Publication until (a) Precision has provided written comments during such Review Period on the material in such Publication, or (b) the applicable Review Period has elapsed without written comments from Precision, in which case TGTX may proceed and the Publication will be considered approved in its entirety. If TGTX receives written comments from Precision on any Publication during the applicable Review Period, then it will consider Precision's comments in good faith and incorporate such comments where appropriate. Notwithstanding any provision to the contrary set forth in this Agreement, TGTX will (y) delete any Confidential Proprietary Information of Precision that Precision identifies for deletion, and (z) delay such Publication for a period of up to an additional [***] after the end of the applicable Review Period to enable Precision to draft and file one or more patent applications with respect to any subject matter to be made public in such Publication. TGTX will provide Precision a copy of the Publication at the time of the submission or presentation thereof. TGTX agrees to acknowledge the contributions of Precision and the employees of Precision, in each case, in all Publications as scientifically appropriate. TGTX will require its Affiliates and Sublicensees to comply with the obligations of this Section 12.3 as if they were TGTX, and TGTX will be liable for any non-compliance of such Persons. For the avoidance of doubt, neither Party will be prevented by this Section 12.3 from complying with any duty of disclosure it may have pursuant to Applicable Laws or pursuant to the rules or regulations of any applicable Governmental Authority, national securities exchange or quotation system, subject to the restrictions set forth in Sections 12.1.4 and 12.1.5.

ARTICLE 13

TERM & TERMINATION

13.1 **Term**. This Agreement shall commence on the Effective Date and, unless terminated earlier as provided in this Article 13 or by mutual written agreement of the Parties, shall continue until the expiration of the last Royalty Term (the "***Term***"). Upon expiration (but not termination of this Agreement) of the Royalty Term with respect to the Licensed Product in any country within the Territory, the licenses under Section 7.1.1 and Section 7.1.2 with respect to such Licensed Product in such country will become perpetual, fully paid-up and royalty-free.

13.2 **Termination**.

13.2.1 **Termination for Material Breach of Agreement**.

(a) Either Party may terminate this Agreement upon written notice to the other Party if such other Party materially breaches its obligations under this Agreement and, after receiving written notice from the non-breaching Party identifying such material breach in reasonable detail, fails to cure such material breach within [***] from the date of such notice [***].

(b) If an allegedly-breaching Party disputes in good faith the existence or materiality of a breach specified in a notice provided pursuant to Section 13.2.1(a), and such Party provides notice to the non-breaching Party of such Dispute within the applicable cure period, such Party may refer the Dispute for resolution in accordance with Section 14.3 and 14.4. It is understood and acknowledged that during the pendency of such a Dispute, all of the terms and conditions of this Agreement shall remain in effect, the Parties shall continue to perform all of their respective obligations hereunder in good faith with continued diligence, and the non-breaching Party shall not have the right to terminate this Agreement pursuant to Section 13.2.1(a) on the basis of such disputed breach.

13.2.2 **Termination by Precision**. Without limiting Section 13.2.1, Precision may terminate this Agreement upon written notice to TGTX if (a) TGTX fails to Initiate a Phase I Clinical Trial of the Licensed Product in the Licensed Field by the Initiation Deadline, or (b) [***] TGTX and its Affiliates and Sublicensees have suspended or do not have an active and ongoing Development program with respect to the Licensed Product for [***].

13.2.3 **Termination for Insolvency**. In the event that either Party (a) makes an assignment for the benefit of creditors, (b) appoints or suffers appointment of a receiver or trustee over any or substantially all of its property, where the receiver or trustee appointment is not discharged within [***] after such filing, (c) proposes a written agreement of composition with its creditors, (d) resolves to enter into, or enters into, a scheme of arrangement or a deed of company arrangement, (e) proposes or is a party to any dissolution or liquidation, (f) appoints or suffers the appointment of an administrator, (g) files a petition under any bankruptcy or insolvency act or has any such petition filed against it that is not discharged within [***] of the filing thereof, or (h) admits in writing its inability generally to meet its obligations as they fall due in the general course or is otherwise insolvent within the meaning given in Applicable Laws, then such Party will promptly notify the other Party of the occurrence of such Insolvency Event, and Precision (if TGTX becomes subject to a relevant Insolvency Event) or TGTX (if Precision becomes subject to a relevant Insolvency Event) may terminate this Agreement in its entirety effective immediately upon written notice to the other Party.

13.2.4 **Termination for Patent Challenges**. To the extent permitted under Applicable Law, Precision shall have the right to terminate this Agreement upon written notice to TGTX if TGTX or any of its Affiliates or Sublicensees, directly, or indirectly through any Third Party challenges the validity of any Patents Controlled by Precision, including commencing any pre-grant or post-grant action, interference or opposition proceeding with respect to, challenging the patentability, validity or enforceability of, or opposing any extension of or the grant of a Patent Term Adjustment or Extension or supplementary protection certificate with respect to, the Licensed Product in the Territory. Notwithstanding the forgoing, (a) Precision will not have any right to terminate this Agreement pursuant to this Section 13.2.4 on the basis of that act if, within [***] after TGTX's receipt of written notice from Precision, (i) the challenging party permanently withdraws its challenge with respect to any challenge made by a Sublicensee or (ii) TGTX terminates the applicable sublicense agreement; and (b) this Section 13.2.4 shall not apply to any challenge that (i) is required under a court order or subpoena or (ii) is asserted as a defense against a claim, action or proceeding asserted directly or indirectly by Precision or its Affiliates against TGTX, its Affiliates, or any Sublicensee with respect to Exploitation of the Licensed Product in the Licensed Field.

13.3 **Effects of Termination**. Upon any termination of this Agreement, the following provisions will apply, and all Licensed Products will be deemed "***Terminated Products***."

13.3.1 **Termination of Licenses from Precision**. All licenses for Terminated Products granted by Precision under Article 7 terminate automatically as of the termination effective date and all such rights shall revert to Precision; *provided* that, if TGTX (or its Affiliates or Sublicensees) has inventory of usable Terminated Product(s) as of the effective date of termination, then TGTX (and its Affiliates and Sublicensees) may continue to sell off such inventory of Terminated Products in the Licensed Field in the Territory (and fulfill customer orders therefor) until the earlier to occur of [***] after the effective date of termination and the date on which TGTX (or its Affiliates or Sublicensees) no longer has such inventory of Terminated Product(s) and shall pay Precision any applicable Royalties due (and Commercial Milestone Payments for Commercial Milestone Events achieved, as applicable) based on such sales. Any permitted sublicense granted by TGTX or its Affiliate to a Sublicensee under the licenses granted to TGTX under this Agreement shall survive the termination of this Agreement upon written request by the applicable Sublicensee and TGTX shall assign such sublicense to Precision such that such sublicense becomes a direct license between Precision and the Sublicensee on the same terms and conditions as those set forth in this Agreement to the extent applicable to the rights granted by TGTX to such Sublicensee, *provided* that, such sublicense was granted in accordance with the terms of Section 7.3 and in the case where termination of this Agreement was for TGTX's uncured material breach pursuant to Section 13.2.1, such Sublicensee did not cause such uncured material breach and such Sublicensee is, at the time of such termination, otherwise in compliance with the sublicense granted by TGTX to such Sublicensee and the applicable terms and conditions of this Agreement.

13.3.2 **Destruction of Confidential Proprietary Information**. Subject to the potential transfer of any data and information covered below in Section 13.4, each Receiving Party shall destroy (at the Disclosing Party's written request) all such Confidential Proprietary Information of the Receiving Party in its possession as of the effective date of expiration or termination (with the exception of one (1) copy of such Confidential Proprietary Information, which may be retained by the legal department of the Receiving Party to confirm compliance with the non-use and non-disclosure provisions of this Agreement), and any Confidential Proprietary Information of the Disclosing Party contained in its laboratory notebooks or databases, *provided* that each Receiving Party may retain and continue to use such Confidential Proprietary Information of the Disclosing Party only to the extent necessary to exercise any surviving rights, licenses or obligations under this Agreement. Notwithstanding the foregoing, a Receiving Party shall not be required to destroy any computer files created during automatic system back up that are subsequently stored securely by it and not readily accessible to its Representatives who received the Disclosing Party's Confidential Proprietary Information under this Agreement, and neither Party shall be required to destroy any Joint IP.

13.4 **Terminated Product Reversion.**

13.4.1 In the event of any termination of this Agreement, upon Precision's request, TGTX shall perform the following obligations, and Precision shall reimburse TGTX for the actual, reasonable costs associated with the performance of such obligations:

(a) to the extent permitted by Applicable Laws or the terms of any applicable Third Party agreements (including Third Party agreements under which TGTX or any of its Affiliates are granted a license related to the Exploitation of any Terminated Product), (i) assign to Precision (A) TGTX's and its Affiliates' entire right, title and interest in and to all materials, preclinical and clinical data, safety data and all other supporting data, in each case, relating to such Terminated Product that is in TGTX's or its Affiliates' Control, and (B) TGTX's and its Affiliates' entire right, title and interest in and to all such Third Party agreements that are freely assignable and relate to the Exploitation of any applicable Terminated Product and for which such Third Party agrees to release TGTX for obligations and liabilities arising from and after such assignment, *provided*, that TGTX will retain the right to use any of the assigned materials or data as necessary for legal or compliance purposes, (ii) with respect to any Third Party agreements that are not assigned under (i) and under which TGTX or any of its Affiliates are granted a license related to Exploitation of any Terminated Product and pursuant to which TGTX or its Affiliates have a right or ability to grant sublicenses to Precision, grant a sublicense to Precision of all license rights granted to TGTX thereunder, on and subject to the same terms and conditions (including financial terms) set forth in the applicable Third Party agreement solely to Exploit such Terminated Product in all fields in the Territory, and (iii) deliver to Precision a copy of all relevant Know-How, in each case that relates to, and to the extent necessary or reasonably useful for, Precision to continue the Exploitation of such Terminated Product;

(b) to the extent permitted by Applicable Laws and the terms of any applicable Third Party agreements, transfer to Precision ongoing Clinical Trials or other studies being conducted by or under authority of TGTX related to such Terminated Product as of the date of the applicable termination notice and furnish Precision with reasonable cooperation to transition to Precision the management and continued performance of such Clinical Trials or other studies or, if requested by Precision, terminate such Clinical Trials or other studies, in each case in a manner in compliance with Applicable Laws and ethical guidelines;

(c) to the extent permitted by Applicable Laws and the terms of any applicable Third Party agreements, transfer to Precision any and all Regulatory Filings and related regulatory data (including pharmacovigilance databases, adverse drug experience reports and associated documents) and nonclinical, clinical and other data contained or referenced in or supporting any Regulatory Filings and related Know-How, manufacturing records, Regulatory Approvals, Marketing Authorizations and all other correspondence (including minutes and official contact reports relating to any communications with any Regulatory Authority), filings and submissions with and to Regulatory Authorities with respect to such Terminated Product; and, to this end, TGTX shall file for transfer with the relevant Regulatory Authorities and to give all other notifications and approvals necessary under Applicable Laws for the transfer of such Regulatory Filings and related regulatory data and Know-How, Regulatory Approvals, Marketing Authorizations and such other filings and submissions;

(d) after fulfillment of TGTX's existing commitments to its customers (including its Distributors) (which fulfillment period shall not in any event exceed [***] following termination of this Agreement as set forth in Section 13.3.1), sell to Precision TGTX's then-existing inventory of such Terminated Product, at TGTX's cost of goods sold for such Terminated Product as calculated in accordance with U.S. GAAP without mark-up; *provided* that Precision shall not be obligated to purchase such inventory;

(e) if an application seeking Marketing Authorization for a given Terminated Product has been filed as of the effective date of termination of this Agreement, assign to Precision all right, title and interest in and to the Licensed Product Trademarks that have been used in commerce solely with such Terminated Product, together with all goodwill relevant thereto, throughout the Territory; *provided*, however, that such obligation to assign will not extend to (i) any corporate name or logo of TGTX or any of its Affiliates, or (ii) any trademarks used by TGTX or any of its Affiliates on products that are not a Terminated Product;

(f) TGTX shall not withdraw or cancel any such Terminated Product's Regulatory Approval or Marketing Authorization or application for either, unless expressly instructed so by Precision in writing or required by Applicable Laws or any Regulatory Authority; *provided* that Precision shall be responsible for all costs and expenses for the maintenance of all Regulatory Approvals and Marketing Authorizations following receipt of notice of termination;

(g) TGTX shall thereafter refrain from making any statement, public or otherwise, regarding any Terminated Product unless TGTX is required to make such statement pursuant to Applicable Law or requirements of any Regulatory Authority and such statement is limited to the fact that TGTX is no longer Developing or Commercializing such Terminated Product or Precision shall have approved any such statement in writing; and

(h) following written request by Precision, TGTX shall take such other actions and execute such other instruments, assignments and documents that are reasonably necessary to effect the transfers and grants of rights under this Section 13.4.1 to Precision.

Following the foregoing assignments and transfer, all information and Know-How so assigned or transferred that was previously Confidential Proprietary Information of TGTX shall thereafter be deemed the Confidential Proprietary Information of Precision under Article 12.

13.4.2 **Other Rights and Obligations**. Upon any termination of this Agreement, all other rights granted under this Agreement and all obligations of the Parties will automatically terminate except as expressly set forth in Section 13.3, this Section 13.4 or Section 13.5.

13.5 **Survival**. Expiration or termination of this Agreement shall not relieve the Parties of any obligation or right accruing prior to such expiration or termination. Except as set forth below or elsewhere in this Agreement, the obligations and rights of the Parties under the following provisions of this Agreement shall survive (including, with respect to any covenants or other obligations, until such covenants have been fully performed and discharged) expiration or termination of this Agreement: Articles 1 (to the extent such definitions are used in surviving provisions) and 14 and Sections 3.2.2, 4.1.1 (only upon expiration, and not termination, of this Agreement), 4.3 (first sentence only, and only upon expiration, and not termination, of this Agreement), 4.4.1 (other than the second and third sentences, and only upon expiration, and not termination, of this Agreement), 4.4.2 (only upon expiration, and not termination, of this Agreement), 4.5 (only upon expiration, and not termination, of this Agreement), 4.6 (only upon expiration, and not termination, of this Agreement), 5.1.4 (only upon expiration, and not termination, of this Agreement), 5.3, 7.2, 7.4 (first sentence only), 8.1, 8.2.1(a), 8.2.1(b), 8.2.1(c) (in the event that Milestone Event 1 has been achieved prior to the effective date of such termination or expiration), 8.2.1(d) (in the event that Milestone Event 2 has been achieved prior to the effective date of such termination or expiration), 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, 8.2.7, 8.2.8, 8.3 (with respect to Milestone Events achieved prior to the effective date of such termination or expiration), 8.4 (with respect to Milestone Events achieved prior to the effective date of such termination or expiration), 8.6 (with respect to sales of Licensed Products made before the effective date of such termination or expiration or pursuant to Section 13.3.1), 8.7, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14 (with respect to any TGTX Parent Consideration Shares issued or issuable as consideration for any Milestone Events achieved prior to the effective date of such termination or expiration), 9.1.1, 9.1.2, 9.1.3, 9.2.1, 9.2.2, 9.3.2 (with respect to any and all Infringements of Joint IP), 9.3.5 (with respect to actions brought before the effective date of such termination or expiration, or brought with respect to Joint IP after the effective date of such termination or expiration), 9.3.6 (with respect to actions brought with respect to Joint IP), 9.4 (with respect to Joint IP), 9.6, 9.8 (final sentence only), 10.7, 11.1 (with respect to claims for which the cause of action arose prior to the effective date of termination or expiration), 12.1 (to the extent and as described in Section 12.1.6), 13.1 (only upon expiration, and not termination, of this Agreement), 13.3, 13.4, 13.5, 13.6, 15.1, 15.2, 15.4, 15.5, 15.6, 15.8, 15.10, 15.14, 15.15, 15.16, and 15.18.

13.6 **Exercise of Rights to Terminate; Damages; Relief**. The valid use by either Party of a termination right provided for under this Agreement shall not give rise to the payment of damages or any other form of compensation or relief to the other Party with respect thereto; *provided*, however, that termination of this Agreement shall not preclude either Party from claiming any other damages, compensation or relief that it may be entitled to upon termination.

13.7 **Bankruptcy Code**. If this Agreement is rejected by a Party as a debtor under Section 365 of the United States Bankruptcy Code or similar provision in the bankruptcy laws of another jurisdiction (the "***Code***"), then, notwithstanding anything else in this Agreement to the contrary, all licenses and rights to licenses granted under or pursuant to this Agreement by the Party in bankruptcy to the other Party are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the Code (or similar provision in the bankruptcy laws of the jurisdiction), licenses of rights to "intellectual property" as defined under Section 101(35A) of the Code (or similar provision in the bankruptcy laws of another applicable jurisdiction). The Parties agree that a Party that is a licensee of rights under this Agreement shall retain and may fully exercise all of its rights and elections under the Code, and that upon commencement of a bankruptcy proceeding by or against a Party under the Code, the other Party shall be entitled to a complete duplicate of, or complete access to (as such other Party deems appropriate), any such intellectual property to which such other Party is otherwise entitled to have access under this Agreement and all embodiments of such intellectual property, if not already in such other Party's possession, shall be promptly delivered to such other Party: (a) upon any such commencement of a bankruptcy proceeding upon written request therefor by such other Party, unless the bankrupt Party elects to continue to perform all of its obligations under this Agreement; or (b) if not delivered under the foregoing subclause (a), upon the rejection of this Agreement by or on behalf of the bankrupt Party upon written request therefor by the other Party. [***]. The foregoing provisions of this Section 13.7 are without prejudice to any rights a Party may have arising under the Code.

ARTICLE 14

GOVERNING LAW; DISPUTE RESOLUTION

14.1 **Governing Law**. This Agreement shall be interpreted and construed in accordance with the laws of the State of New York. Any and all claims, controversies, and causes of action arising out of or relating to this Agreement, whether sounding in contract, tort, or statute, shall be governed by the laws of the State of New York, including its statutes of limitations, without giving effect to any conflict-of-laws or other rule that would result in the application of the laws of a different jurisdiction. Notwithstanding the foregoing, any issue relating to the interpretation, construction, validity, enforceability or infringement of Patents shall be determined according to the patent laws of the country (or countries) in which the relevant Patent (or Patents) issued. The United Nations Convention of International Contracts on the Sale of Goods (the Vienna Convention) does not apply to this Agreement.

14.2 **Disputes**. The Parties recognize that controversies or claims arising out of, relating to, or in connection with this Agreement may arise from time to time. It is the objective of the Parties to establish procedures to facilitate the resolution of disputes in an expedient manner by mutual cooperation prior to resort to litigation. To accomplish this objective, the Parties shall follow the procedures set forth in this Article 14 to resolve any dispute, claim or controversy of any nature arising out of or relating to this Agreement, including any action or claim based on tort, contract or statute, or concerning the interpretation, effect, termination, validity, performance or breach of this Agreement (each, a "***Dispute***"). For the avoidance of doubt, Disputes within the purview of the JSC shall be resolved pursuant to Section 2.6, including through the exercise by a Party of its final decision-making authority in accordance therewith and including the escalation procedures set forth therein; *provided* that Disputes regarding whether a decision is subject to Precision's JSC representatives having final decision-making authority or to TGTX's JSC representatives having final decision-making authority pursuant to Section 2.6 shall be resolved pursuant to the procedures set forth in this Article 14.

14.3 **Executive Officers**. If a Dispute arises between the Parties, either Party may refer the Dispute to Executive Officers of each Party for resolution within [***] of a written request by either Party to the other Party. Each Party, within [***] after a Party has received such written request from the other Party to so refer such Dispute, shall notify the other Party in writing of the Executive Officer to whom such Dispute is referred. If, after an additional [***] after the notice of Dispute, such Executive Officers have not succeeded in negotiating a resolution of the Dispute, and a Party wishes to pursue the matter, the Parties may seek to resolve the Dispute in accordance with Section 14.4.

14.4 **Submission to Jurisdiction**. Each Party hereby (a) submits to the exclusive jurisdiction of the United States District Court for the Southern District of New York or, if such court does not have jurisdiction, any state court sitting in the City of New York, New York in any action or proceeding arising out of or relating to this Agreement, (b) agrees that all claims in respect of such action or proceeding may be heard and determined only in any such court, and (c) agrees not to bring any action or proceeding arising out of or relating to this Agreement in any other court. Each Party waives any defense of inconvenient forum to the maintenance of any action or proceeding so brought and waives any bond, surety or other security that might be required of the other Party with respect thereto. Either Party may make service on the other Party by sending or delivering a copy of the process to the Party to be served at the address and in the manner provided for the giving of notices in Section 15.4. Nothing in this Section 14.4, however, shall affect the right of either Party to serve legal process in any other manner permitted by law.

14.5 **Waiver of Jury Trial**. TO THE EXTENT PERMITTED BY APPLICABLE LAW, EACH PARTY HEREBY IRREVOCABLY WAIVES ALL RIGHTS TO TRIAL BY JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM (WHETHER BASED ON CONTRACT, TORT OR OTHERWISE) ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS OR THE ACTIONS OF EITHER PARTY IN THE NEGOTIATION, ADMINISTRATION, PERFORMANCE AND ENFORCEMENT OF THIS AGREEMENT.

14.6 **Equitable Relief**. Either Party may, at any time and without waiving any remedy under this Agreement, seek from any court having jurisdiction any temporary injunctive or provisional relief necessary to protect the rights or property of that Party. Any final judgment resolving a Dispute may be enforced by either Party in any court having appropriate jurisdiction.

ARTICLE 15

MISCELLANEOUS

15.1 **Entire Agreement; Amendment**. This Agreement, including the Exhibits and Schedules hereto, sets forth the complete, final and exclusive agreement and all the covenants, promises, agreements, warranties, representations, conditions and understandings between the Parties hereto with respect to the subject matter hereof and supersedes, as of the Effective Date, all prior and contemporaneous agreements and understandings between the Parties with respect to the subject matter hereof, including the Confidentiality Agreement. The foregoing may not be interpreted as a waiver of any remedies available to either Party as a result of any breach, prior to the Effective Date, by the other Party of its obligations under the Confidentiality Agreement. No subsequent alteration, amendment, change or addition to this Agreement shall be binding upon the Parties unless reduced to writing and signed by an authorized officer of each Party.

15.2 **Limitation of Liability**. NEITHER PARTY MAY RECOVER FROM THE OTHER PARTY ANY SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES IN CONNECTION WITH THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF THE POSSIBILITY OF SUCH DAMAGES; *PROVIDED*, HOWEVER, THAT THIS SECTION 15.2 SHALL NOT BE CONSTRUED TO LIMIT EITHER PARTY'S INDEMNIFICATION OBLIGATIONS UNDER ARTICLE 11, EITHER PARTY'S LIABILITY FOR BREACH OF ITS CONFIDENTIALITY OBLIGATIONS UNDER ARTICLE 12 OR LIABILITY OF A PARTY FOR ITS INFRINGEMENT OR MISAPPROPRIATION OF ANY INTELLECTUAL PROPERTY RIGHTS OR FOR A PARTY'S GROSS NEGLIGENCE, WILLFUL MISCONDUCT OR FRAUD. IN ADDITION, IN NO EVENT SHALL PRECISION'S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO SUPPLY OF LICENSED PRODUCT UNDER SECTION 6.2.1 OF THIS AGREEMENT, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, EXCEED [***].

15.3 **Independent Contractors**. The relationship between TGTX and Precision created by this Agreement is solely that of independent contractors. This Agreement does not create any agency, distributorship, employee-employer, partnership, joint venture or similar business relationship between the Parties. Neither Party is a legal representative of the other Party, and neither Party can assume or create any obligation, representation, warranty, or guarantee, express or implied, on behalf of the other Party.

15.4 **Notice**. Any notice required or permitted to be given by this Agreement must be in writing, in English. Any and all notices or other communications or deliveries required or permitted to be provided hereunder must be in writing and will be deemed given and effective if: (a) delivered by hand or by overnight courier with tracking capabilities; (b) mailed postage prepaid by first class, registered, or certified mail; or (c) delivered by facsimile or electronic mail followed by delivery via either of the methods set forth in clauses (a) and (b) of this Section 15.4, in each case, addressed as set forth below unless changed by notice so given:

If to Precision:

Precision BioSciences, Inc.
302 East Pettigrew Street, Suite A-100
Durham, NC 27701, U.S.A.
Attn: Cindy Atwell, Chief Business Officer
E-mail: [***]

with a copy (which shall not constitute notice) to:

Smith, Anderson, Blount, Dorsett,
Mitchell & Jernigan, LLP
150 Fayetteville Street, Suite 2300
Raleigh, NC 27601, U.S.A.
Attention: John Therien

If to TGTX:

TG Cell Therapy, Inc.
3020 Carrington Mill Blvd, Suite 475
Morrisville, North Carolina 27560
Attention: Michael S. Weiss, Executive Chairman and Chief Executive Officer

with a copy (which shall not constitute notice) to:

DLA Piper LLP
650 South Exeter Street, Suite 1100
Baltimore, MD 21202
Attention: Howard S. Schwartz, Esq.
Email: [***]

If to TGTX Parent:

TG Therapeutics, Inc.
3020 Carrington Mill Blvd, Suite 475
Morrisville, North Carolina 27560
Attention: Michael S. Weiss, Executive Chairman and Chief Executive Officer

with a copy (which shall not constitute notice) to:

DLA Piper LLP
650 South Exeter Street, Suite 1100
Baltimore, MD 21202
Attention: Howard S. Schwartz, Esq.
Email: [***]

15.5 **Severability**. If, for any reason, any part of this Agreement is adjudicated invalid, unenforceable, or illegal by a court of competent jurisdiction, (a) such adjudication shall not, to the extent feasible, affect or impair, in whole or in part, the validity, enforceability, or legality of any remaining portions of this Agreement, (b) this Agreement shall be construed and enforced as if such invalid, unenforceable or illegal provision had never comprised a part hereof, (c) all remaining portions will remain in full force and effect and shall not be affected by the invalid, unenforceable or illegal provision or by its severance herefrom, and (d) in lieu of such invalid, unenforceable or illegal provision, the Parties shall use reasonable efforts to seek and agree on an alternative valid and enforceable provision that preserves the original purpose and intent of this Agreement.

15.6 **Non-Use of Names**. Except as permitted pursuant to Section 12.2, Precision shall not use the name, trademark, logo, or physical likeness of TGTX or its respective officers, directors or employees, or any adaptation of any of them, in any advertising, promotional or sales literature, without TGTX's prior written consent; *provided* that Precision shall have the right to use the name and logo of TGTX on its website solely for the purpose of referring to TGTX as a partner of Precision. Precision shall require its Affiliates to comply with the foregoing. Except as permitted pursuant to Section 12.2, TGTX shall not use the name, trademark, logo, or physical likeness of Precision or its officers, directors or employees, or any adaptation of any of them, in any advertising, promotional or sales literature, without Precision's prior written consent; *provided* that TGTX shall have the right to use the name and logo of Precision on its website and in presentation materials solely for the purpose of referring to Precision as licensor of technology used by TGTX. TGTX shall require its Affiliates and Sublicensees to comply with the obligations set forth in this Section 15.6.

15.7 **Assignment**. Neither Party may assign or transfer this Agreement or any rights or obligations hereunder without the prior written consent of the other, except that a Party may make such an assignment or transfer, without the other Party's consent to: (a) its Affiliate *provided* that (i) such Affiliate has sufficient resources to perform under this Agreement and (ii) such Party shall remain primarily liable for any acts or omissions of such Affiliate; or (b) to an Acquirer in connection with a Change of Control of such Party. For the avoidance of doubt, (y) nothing in this Agreement shall be construed as consent by Precision to assignment of this Agreement by TGTX in the context of a bankruptcy proceeding, and (z) nothing in this Agreement shall be construed as consent by TGTX to assignment of this Agreement, prior to [***], by Precision in the context of a bankruptcy proceeding. Any permitted assignee shall, in writing reasonably satisfactory to the non-assigning party and as a condition to the effectiveness of such assignment, expressly assume performance of such assigning Party's rights and obligations hereunder and unconditionally agree to the terms hereof. Any permitted assignment or transfer is binding on the successors of the assigning or transferring Party and shall inure to their benefit. Any assignment or transfer or attempted or purported assignment or transfer by either Party in violation of the terms of this Section 15.7 is null, void and of no legal effect.

15.8 **Waivers**. The failure of a Party to insist upon strict performance of any provision of this Agreement or to exercise any right arising out of this Agreement shall neither impair that provision or right nor constitute a waiver of that provision or right, in whole or in part, in that instance or in any other instance. Any waiver by a Party of a particular provision or right shall be in writing, shall be as to a particular matter and, if applicable, for a particular period of time and shall be signed by such Party.

15.9 **Force Majeure**. Neither Party shall be responsible to the other for any failure or delay in performing any of its obligations under this Agreement or for other nonperformance hereunder (excluding, in each case, the obligation to make payments when due) if such delay or nonperformance is caused by strike, fire, flood, earthquake, accident, war, act of terrorism, epidemics, pandemics, the spread of infectious diseases, quarantines, act of God or of the government of any country or of any local government, or by any other cause unavoidable or beyond the control of any Party hereto. In such event, such affected Party shall use Commercially Reasonable Efforts to resume performance of its obligations and will keep the other Party informed of actions related thereto.

15.10 **Interpretation**. The captions and headings to this Agreement are for convenience only, and are to be of no force or effect in construing or interpreting any of the provisions of this Agreement. Unless specified to the contrary, references to Articles, Sections, Schedules or Exhibits mean the particular Articles, Sections, Schedules or Exhibits to this Agreement and references to this Agreement include all Exhibits and Schedules hereto. In the event of any conflict between the main body of this Agreement and any Exhibit or Schedule hereto, the main body of this Agreement shall prevail. Unless context otherwise clearly requires, whenever used in this Agreement: (a) the words "include" or "including" shall be construed as incorporating, also, "but not limited to" or "without limitation"; (b) the word "day" or "year" means a calendar day or Calendar Year unless otherwise specified; (c) the word "notice" means notice in writing (whether or not specifically stated) and shall include notices, consents, approvals and other written communications contemplated under this Agreement; (d) the words "hereof," "herein," "hereby" and derivative or similar words refer to this Agreement as a whole and not merely to the particular provision in which such words appear; (e) the words "shall" and "will" have interchangeable meanings for purposes of this Agreement; (f) provisions that require that a Party, the Parties or a committee hereunder "agree," "consent" or "approve" or the like shall require that such agreement, consent or approval be specific and in writing, whether by written agreement, letter, approved minutes or otherwise; (g) words of any gender include the other gender; (h) words using the singular or plural number also include the plural or singular number, respectively; (i) references to any specific law, rule or regulation, or article, section or other division thereof, shall be deemed to include the then-current amendments thereto or any replacement law, rule or regulation thereof; (j) the phrase "non-refundable" shall not prohibit, limit or restrict either Party's right to obtain damages in connection with a breach of this Agreement; (k) neither Party shall be deemed to be acting on behalf of the other Party; and (l) the words "gene editing" and "genome editing" have interchangeable meanings for purposes of this Agreement and do not include gene therapy activities (other than gene editing).

15.11 **Counterparts; Electronic Signatures**. This Agreement may be executed in any number of counterparts, each of which is deemed an original, but all of which together constitute one instrument. This Agreement may be executed and delivered electronically and upon such delivery such electronic signature will be deemed to have the same effect as if the original signature had been delivered to the other Party.

15.12 **Expenses**. Each Party shall pay its own costs, charges and expenses incurred in connection with the negotiation, preparation and execution of this Agreement.

15.13 **Further Assurances**. TGTX and Precision hereby covenant and agree without the necessity of any further consideration, to execute, acknowledge and deliver any and all documents and take any action as may be reasonably necessary to carry out the intent and purposes of this Agreement.

15.14 **No Third Party Beneficiary Rights**. This Agreement is not intended to and shall not be construed to give any Third Party any interest or rights (including any Third Party beneficiary rights) with respect to or in connection with any agreement or provision contained herein or contemplated hereby.

15.15 **Construction**. The Parties hereto acknowledge and agree that: (a) each Party and its counsel reviewed and negotiated the terms and provisions of this Agreement and have contributed to its revision; (b) the rule of construction to the effect that any ambiguities are resolved against the drafting Party shall not be employed in the interpretation of this Agreement; and (c) the terms and provisions of this Agreement shall be construed fairly as to all Parties hereto and not in a favor of or against any Party, regardless of which Party was generally responsible for the preparation of this Agreement.

15.16 **Cumulative Remedies**. No remedy referred to in this Agreement is intended to be exclusive unless explicitly stated to be so, but each shall be cumulative and in addition to any other remedy referred to in this Agreement or otherwise available under law.

15.17 **Extension to Affiliates**. Except as expressly set forth otherwise in this Agreement, each Party shall have the right, subject to compliance with the applicable terms of this Agreement, to extend the rights and immunities granted in this Agreement to one or more of its Affiliates. All applicable terms and provisions of this Agreement, except this right to extend, shall apply to any such Affiliate to which this Agreement has been extended to the same extent as such terms and provisions apply to the Party extending such rights and immunities. For clarity, the Party extending the rights and immunities granted hereunder shall remain primarily liable for any acts or omissions of its Affiliates.

15.18 **TGTX Parent Guarantee**.

15.18.1 TGTX Parent hereby absolutely, unconditionally and irrevocably guarantees, jointly and severally, as a primary obligor and not merely as a surety, the due and timely payment and performance of all obligations (including payment obligations and other covenants) of TGTX and each of its Affiliates under this Agreement (the "***Parent Obligations***"). TGTX Parent agrees that (a) the Parent Obligations and this Agreement may be extended, modified or renewed, in whole or in part, without notice or further assent from TGTX Parent, and that TGTX Parent will remain bound upon its guarantee notwithstanding any extension, modification or renewal of any Parent Obligation or of this Agreement, any assumption of any such guaranteed Parent Obligation by any other party or any other act or event that might otherwise operate as a legal or equitable discharge of TGTX Parent under this Section 15.18, (b) TGTX Parent shall be bound by all of the terms and conditions of Article 12, Sections 14.1 and 14.4 – 14.6, and this Article 15 (and all of the definitions and capitalized terms contained therein) as if such Sections and Articles applied to TGTX Parent, and (c) so long as the Parent Obligations remain outstanding, TGTX Parent will operate in the ordinary course of business and not dispose of (by dividend, distribution, sale, transfer, or otherwise) all or substantially all of its assets other than to Affiliates that shall also agree in writing to become a guarantor of the Parent Obligations under the terms and conditions of this Section 15.18. TGTX Parent further agrees that its guarantee constitutes an absolute, unconditional and irrevocable guarantee of payment and performance when due (and not just of collection) and waives (y) any right to require that any resort be had by Precision to any other guarantee for any security held for payment or performance of the Parent Obligations and (z) any other circumstance which might otherwise constitute a defense to this guarantee. This guarantee is in no way conditioned upon any requirement that Precision first attempt to collect or enforce any guaranteed obligation from or against TGTX. NOTWITHSTANDING THE FOREGOING, NEITHER PARTY MAKES ANY REPRESENTATION OR EXTENDS ANY WARRANTY OF ANY KIND, ORAL, WRITTEN, EXPRESS, IMPLIED, OR OTHERWISE, IN CONNECTION WITH THIS GUARANTEE, AND EACH PARTY HEREBY DISCLAIMS, AND TGTX PARENT ACKNOWLEDGES AND AGREES TO THE DISCLAIMER BY THE PARTIES OF, ALL REPRESENTATIONS AND WARRANTIES IN CONNECTION WITH THIS GUARANTEE.

15.18.2 TGTX Parent represents and warrants that, as of the Effective Date:

(a) it is duly organized and validly existing under in the Applicable Laws of the jurisdiction of its incorporation or formation, as applicable, has full corporate, limited liability company or other power and authority, as applicable, to enter into this Agreement and to carry out the provisions hereof;

(b) it is duly authorized to execute and deliver this Agreement and to perform its obligations hereunder, and the individual executing this Agreement on its behalf has been duly authorized to do so by all requisite corporate, limited liability company or other action, as applicable; and

(c) this Agreement is legally binding upon it and enforceable in accordance with its terms (except as the enforceability thereof may be limited by bankruptcy, bank moratorium or similar laws affecting creditors' rights generally and laws restricting the availability of equitable remedies and may be subject to general principles of equity whether or not such enforceability is considered in a proceeding at law or in equity) and the execution, delivery and performance of this Agreement by it have been duly authorized by all necessary corporate action and do not and will not: (i) conflict with, or constitute a default or result in a breach under, any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound, or violate any Applicable Law; or (ii) require any consent or approval of its stockholders or similar.

[signature page follows]

In Witness Whereof, the Parties have caused this Agreement to be executed as of the Effective Date by their duly authorized representatives.

Precision BioSciences, Inc.

By: /s/ Michael Amoroso
Name: Michael Amoroso
Title: Chief Executive Officer

[Signature Page to License Agreement]

TG Cell Therapy, Inc.

By: /s/ Michael S. Weiss
Name: Michael S. Weiss
Title: CEO

In Witness Whereof, TGTX Parent has caused this Agreement to be executed, with respect to Sections 8.14 and 15.18, as of the Effective Date by its duly authorized representative.

TG Therapeutics, Inc.

By: /s/ Michael S. Weiss
Name: Michael S. Weiss
Title: Executive Chairman and CEO

Exhibit 1.85

Licensed ARCUS Nuclease
[Omitted]

[***]

Exhibit 10.2.2

Existing Patents
[Omitted]

[***]

Schedule 1.45

Patents within Duke IP as of the Effective Date
[Omitted]

[***]

Exhibit 10.12

LEASE AGREEMENT BY AND BETWEEN

VENABLE TENANT, LLC, as Landlord

AND

PRECISION BIOSCIENCES, INC., as Tenant

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Exhibit A Description of the Land
Exhibit B Floor Plan of Premises
Exhibit C Premises Specifications
Exhibit D Work Letter
Exhibit D-1 Preliminary Plans
Exhibit D-2 Final Plans
Exhibit E Rules and Regulations
Exhibit F Tenant Security Procedures
Exhibit G List of Hazardous Materials

1.Defined Terms. Capitalized words and phrases used in this Lease have the following meanings:

1.01Additional Rent - all sums other than Base Annual Rent payable by Tenant to Landlord pursuant to the terms of this Lease, including, but not limited to, Tenant's Proportionate Share of Operating Expenses.

1.02Applicable Laws – collectively, any local, state or Federal laws, statutes, rules, regulations, ordinances, and court or judicial orders and decrees.

1.03Audit Notice - a written notice that Tenant wishes to examine itself or to employ a nationally-recognized consulting firm (on a capped contingency fee basis) or an independent certified public accounting firm (on an hourly rate basis) reasonably acceptable to Landlord, to inspect and audit Landlord's books and records in order to confirm the accuracy of the Statement.

1.04Base Annual Rent - a base annual rental equal to the product of (x) the Base Rate multiplied by (y) the Net Rentable Area.

1.05Base Annual Rent Escalation – the increase in the CPI with a floor of two and one-half percent (2.5%) and a ceiling of three percent (3%).-

1.06Base Rate - Seventeen and 85/100 Dollars ($17.85) per rentable square foot for the first twelve (12) months following the Commencement Date, and thereafter increased by the Base Annual Rent Escalation.

1.07Building – the Dibrell A Warehouse Building at 302 East Pettigrew Street, Durham, North Carolina.

1.08Commencement Date - the later to occur of: (i) October 1, 2010, or (ii) completion of the Tenant Improvements as evidenced by the issuance of a certificate of occupancy by the City of Durham and certification of substantial completion by the Tenant's architect.–

1.09Common Areas - the driveways, parking areas, pedestrian sidewalks, common conference rooms, kitchen areas, lobbies, stairways, entranceways, bathrooms and canteens, if any, provided by Landlord as a convenience for use in common by Landlord and all tenants of the Building as an appurtenance to the Premises, each building in the Project, and the Project.

1.010Controllable Expenses - all Operating Expenses, excluding utilities (e.g., electricity, gas, water and sewer), property taxes, and insurance, for which Landlord has an opportunity to select vendors and negotiate rates with the selected vendors, as reasonably determined by Landlord.

1.011CPI - shall mean an amount determined by multiplying the Base Annual Rent by a fraction, the denominator of which is the Revised Consumer Price Index for All Urban Consumers – New Series (1982-1984 = 100) U.S. City Average, All Items, as published by the Bureau of Labor Statistics, U.S. Department of Labor (the "Price Index"), for the first month of the First Lease Year, and the numerator of which is said Price Index for the next to last month of the Lease Year just concluding. In the event that the United States Bureau of Labor Statistics shall discontinue the issuance of the Price Index, then the rental adjustment provided for herein shall be made on the basis of changes in the most comparable and recognized cost of living index then issued and available, which is published by the United States Government.

1.012Force Majeure - delays beyond the control of Landlord or Tenant, including, but not limited to, permitting, availability of materials, acts of God, Tenant Delays, and inclement weather.

1.013Guarantor- N/A.

1.014 Hazardous Material - any hazardous or toxic substance, pollutant, contaminant, gas, toxic mold, or petroleum product defined as such in (or for purposes of) Hazardous Material Laws.

1.015 Hazardous Material Laws- collectively, the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, any so-called "Superfund" or "Superlien", law, the Toxic Substances Control Act, as amended, or any other Federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic or dangerous waste, substance or material, as now or at any time hereafter in effect, or any other hazardous, toxic or dangerous, waste, substance or material, gas or petroleum product.

1.016 Land - certain land in the County of Durham, City of Durham, State of North Carolina, upon which the Building and Project are located and which is more particularly described in Exhibit A.

1.017 Landlord – Venable Tenant, LLC, a North Carolina limited liability company.

1.018 Landlord Party – collectively, the Landlord and its agents, employees, officers, invitees, licensees and independent contractors.

1.019 Lease – this Lease Agreement.

1.020 Lease Year - the first twelve (12) months following the Rent Commencement Date (said first twelve (12) month period will be the first "Lease Year") and each successive twelve-month period during the Term following the expiration of the first Lease Year.

1.021 Master Lease - that Master Lease dated July 11, 2006, pursuant to which the Prime Tenant leased the Building and the Land from the Prime Landlord.

1.022

Net Rentable Area - Eight Thousand Two Hundred Seventy-Four (8,274) rentable square feet, per BOMA measurement standards.

1.023 Operating Expenses - any and all reasonable charges, fees, costs, and expenses actually incurred by Landlord in connection with the management, operation, ownership, maintenance, security, servicing, insuring, and repair of the Building or Project, and will include, without limitation, the following:

(1) Premiums, deductibles, and other charges for insurance;

(2) Real Estate Taxes;

(3) Management fees and personnel costs (including all fringe benefits, workers' compensation insurance premiums and payroll taxes);

(4) Costs of service, access control, and maintenance contracts;

(5) Maintenance, repair, and replacement expenses and supplies;

(6) Depreciation/amortization for capital repairs or expenditures made by Landlord to reduce operating expenses if Landlord reasonably estimates (and documents) that the annual reduction in Operating Expenses will exceed such depreciation or to comply with legal, insurance, or governmental requirements (or repair/maintenance requirements under the Lease);

(7) Charges for janitorial, window, day porter, and cleaning services and supplies;

(8) Any business, professional, or occupational license tax payable by Landlord or other tax or surcharge (or alternative payment or fee levied, charged, or assessed by a governmental entity in addition to or in lieu of a tax, license, or fee);

(9) Reasonable reserves for such replacements, repairs, and contingencies that would be treated as Operating Expense under this Lease;

(10) Sales, use, and personal property taxes payable in connection with tangible personal property and services purchased;
(11) Accounting and audit fees relating to the determination of Operating Expenses (and of Tenant's Proportionate Share thereof) and the preparation of statements required by tenant leases and legal fees (except as provided below);
(12) Expenses incurred in connection with any concierge services;
(13) The rental value of any management office;
(14) Special assessments, fees, charges, levies, penalties, service payments, excises, assessment charges and costs for transit, transit encouragement traffic reduction programs, or any similar purpose;
(15) All costs of operating maintaining, repairing and replacing improvements in any Common Areas; and
(16) Any other reasonable expense actually incurred by Landlord in maintaining, repairing, or operating the Building or the Project.

The following costs and expenses will be excluded from Operating Expenses for the Building and the Project:
(1) Costs in connection with any structural repair or major change in the Building;
(2) Costs, including permit, license, and inspection costs, associated with alterations or improvements of the Premises, the premises of other tenants or occupants of the Building or Project, or incurred in renovating or otherwise improving, decorating, painting or redecorating vacant space for tenants or other occupants of the Building or Project;
(3) Depreciation of the Building or Project, fixtures or equipment;
(4) Interest, points, fees, and principal payments on mortgages and other debt costs, if any, or amortization on any mortgage or mortgages or any other debt instrument encumbering the Building or Project or the Land;
(5) Costs for which Landlord is reimbursed by its insurance carrier, any tenant's carrier, any tenant, any warrantor, or any other third party, to the extent of the reimbursement and not including deductibles;
(6) Any bad debt loss, rent loss, reserves for bad debts or rent loss, or legal fees incurred in collecting rent or other obligations from other Building or Project tenants;
(7) The cost of services provided to certain tenants of the Building or Project beyond those provided to all Building or Project tenants, and costs incurred by Landlord in respect of breaches of other leases in the Building or Project;
(8) Costs associated with the operation of the business of the person or entity which constitutes Landlord, as distinguished from the costs of operation of the Building or Project, including accounting and legal matters, costs of defending any lawsuits with any mortgagee, costs of selling, syndicating, financing, mortgaging or hypothecating any of Landlord's interest in the Building or Project, costs of any disputes between Landlord and its employees, disputes of Landlord with Building or Project management, and outside fees paid in connection with disputes with other tenants and salaries, wages or other compensation above the level of property manager;
(9) Any expenditures which under normal accounting rules should be treated as capital expenditures, except depreciation/amortization for such capital repairs or expenditures made by Landlord for the purpose of reducing Operating Expenses of the Building or Project as set forth above;

(10) Costs of repairs or replacements caused by the exercise of any condemnation rights by any public or quasi-public authority;

(11) Charitable and political contributions, advertising, marketing, and promotional expenditures, including costs of staging special events (unless applied for the benefit of all tenants or the Building or Project as a whole, or as necessary to provide service in accordance with a first-class standard, e.g., expenses for an annual Building or Project holiday party);

(12) Marketing costs and other costs and expenses incurred in connection with lease, sublease and/or assignment negotiations and transactions with present or prospective tenants or other occupants of the Building or Project;

(13) Property management fees in excess of 4% of gross rental receipts;

(14) Costs representing amounts paid to an affiliate of Landlord for services or materials which are in excess of the amounts which would have been paid in the absence of such relationship; and

(15) Any costs, fines, or penalties incurred because Landlord violated any Applicable Law.

1.024 Parking – non-exclusive use of twenty (20) parking spaces.

1.025 Permitted Use – general office and laboratory use for a biotechnology company (or for any other legal use with Landlord's prior written consent which Landlord may withhold in its reasonable discretion.

1.026 Premises - certain premises known as Dibrell A-100, a floor plan of which is attached hereto and made a part hereof as Exhibit B.

1.027 Premises Specifications – the specifications to which the Premises are to be constructed as described in Exhibits C and D.

1.028 Prime Landlord - Pettigrew Street Partners, LLC.

1.029 Prime Tenant - Venable Investor, LLC.

1.030 Project – The Venable Center.

1.031 Real Estate Taxes - any and all taxes (including special assessments) that are payable within a particular calendar year, including all taxes imposed on the Project and the Land. Real Estate Taxes will include, without limitation, (i) all real estate taxes, rates, and assessments (including general and special assessments, if any), ordinary and extraordinary, foreseen and unforeseen, which are imposed upon Landlord or assessed against the Project or the Land, (ii) personal property taxes applicable to the personalty of Landlord, whether used by Landlord or its agent, related to or used in the management or operation of the Project, (other than such taxes based upon Landlord's net income), (iii) any other present or future taxes or charges that are imposed upon Landlord or assessed against the Project or the Land which are in the nature of or in substitute for real estate taxes, including any tax levied on or measured by the gross rents payable by tenants of the Project, any public safety fee or similar charge, any transit, sales, rental, use, receipts, or occupancy tax or fee, and any assessment imposed in connection with business improvement or similar districts, (iv) public space rentals, including but not limited to vault rentals, and (v) all reasonable costs and expenses actually incurred by Landlord, including without limitation reasonable attorneys' fees and consultants' fees and court costs, in connection with reviewing, protesting, or seeking a reduction or abatement of, or defending or otherwise participating in any challenge to, real estate taxes, but only if (i) Tenant approves such protest; or (ii) to the extent said protest or reduction is ultimately successful. If the levy will be levied or imposed on the Project, and/or Land and/or Landlord,

in substitution for real estate taxes and/or personal property taxes presently levied or imposed on immovables in North Carolina, and including also without limitation any Project dues or assessments, any taxes on rents, or alternative which may be enacted by the taxing municipality to pay for municipal services or as a money raising action, whether temporary or permanent, then any such new tax or levy will be included within the amount of Real Estate Taxes of which Tenant will pay its Proportionate Share. Real Estate Taxes will not include, nor will Tenant be obligated to pay pursuant to this Lease, such taxes as capital gains, corporation, unincorporated business, income, profit, excess profit, inheritance, transfer, recordation, estate, gift or franchise taxes, or any fines, penalties and/or interest on late payments of any Real Estate Taxes (unless such late payment is caused by Tenant's failure to make timely payment of any installments of its Proportionate Share of increases in Real Estate Taxes, in which case Tenant will be solely liable to reimburse Landlord for the entirety of any such fine, penalty and/or interest).

1.032 Renewal Term –two (2), three (3) year options to renew at the lesser of the (i) then escalated Base Annual Rate, or (ii) ninety five (95%) percent of the then current market rental rate for comparable laboratory space in downtown Durham, as reasonably determined by Landlord.

1.033 Rent – collectively, the Base Annual Rent and the Additional Rent.

1.034 Rent Abatement – the first five (5) months of the Term.

1.035 Rent Commencement Date – the date which is the first day following expiration of the Rent Abatement period.

1.036 Security Deposit –the equivalent of six (6) months Base Annual Rent, Seventy-Three Thousand Eight Hundred Forty-Five and 45/100 dollars ($73,845.45) in the form of a Letter of Credit to be held by Landlord as security for the performance by Tenant of all obligations imposed on Tenant pursuant to the Lease.

1.037 Statement - a written statement submitted within one hundred and twenty (120) days after the end of each calendar year by Landlord to Tenant showing (i) Tenant's actual Proportionate Share of the amount by which Operating Expenses incurred during the preceding calendar year exceed the Operating Expenses for the Base Year, (ii) the amount thereof paid by Tenant, and (iii) the balance due or the overpayment.

1.038 Sublease – that sublease dated July 11, 2006, pursuant to which the Landlord has leased the entirety of the Building and the Land from the Prime Tenant.

1.039 Tenant - Precision BioSciences, Inc.

1.040 Tenant Delay – any verifiable act or omission by Tenant, or a Tenant Party that proximately results in a delay hereunder. (as reasonably documented by Landlord).

1.041 Tenant's Forecast Operating Expenses - a written statement of Landlord's reasonable estimate of Tenant's Proportionate Share of Operating Expenses for each calendar year (or portion thereof) during the Term or Renewal Term presented to Tenant prior to the beginning of each calendar year. Operating Expenses for 2010 are estimated to be $3.91 per rentable square foot.

1.042 Tenant Improvements – the improvements constructed to prepare the Premises for occupancy by Tenant as described in Exhibit D.

1.043 Tenant Improvement Allowance – Fifty dollars **(**$50.00) per rentable square foot for a total of Four Hundred Thirteen Thousand Seven Hundred Dollars ($413,700.00). The Tenant Improvement Allowance shall be used to fund (listed in order of payment): Landlord Design Oversight (5% of Construction and Design Costs), Design Fees, Permit Fees, Construction

Contingency (5% of Construction Costs), Construction Payment and Performance Bonds, and Construction Costs.

1.044 Tenant Improvement Overage - all costs for the Tenant Improvements minus the Tenant Improvement Allowance.

1.045 Tenant Party - collectively, the Tenant and its agents, employees, officers, invitees, licensees and independent contractors.

1.046 Tenant's Proportionate Share - a percentage which represents the ratio that the number of rentable square feet of the Premises bears to (i) the rentable square footage of the Building for invoices associated specifically with the Building (e.g., building common area janitorial, common area utilities, termite treatment, etc.) which is 16.01409% or (ii) the rentable square footage of the Project for invoices associated with the Project (e.g. property taxes, insurance premiums, landscaping, security, snow/ice removal, etc.) which is 9.63404%. Tenant's Proportionate Share for any partial calendar year during the Lease Term will be determined by multiplying the amount of Tenant's Proportionate Share of increases in Operating Expenses for the full calendar year by a fraction, the numerator of which is the number of days during such calendar year falling within the Lease Term or Renewal Term and the denominator of which is three hundred sixty-five (365) Tenant shall have the right to confirm the measurement of the Premises and its Proportionate Share, and receive appropriate Rent and Tenant Improvement Allowance adjustments, increases, and/or refunds, to the extent Tenant discovers an error and provides evidence of same to Landlord for reasonable confirmation by Landlord.

1.047 Term – sixty-five (65) months.

1.048 Termination Date – that date which is sixty-five (65) months after the Commencement Date.

2. Recitals. This Lease is made and entered into as of the 5th day of April, 2010, by and between the Landlord and the Tenant. The parties hereto acknowledge that Landlord has leased the entirety of the Building and the Land from the Prime Tenant pursuant to the Sublease and that the Prime Tenant has leased the Building and the Land from the Prime Landlord pursuant to the Master Lease. Upon the execution of this instrument, Landlord will sublease the Premises to Tenant. While the transaction effected hereby would be a sublease, and the Landlord and Tenant are respectively, sublandlord and subtenant, for ease of reference, this instrument is referred to as a Lease, and the parties referred to as Landlord and Tenant, and Landlord hereby confirms that it has authority to sublease the Premises to Tenant. Now therefore, in consideration of the foregoing and the mutual covenants provided herein, the parties hereto agree as follows:

3. Premises. In consideration of the obligation of Tenant to pay rent as herein provided, and in consideration of the other terms, provisions and covenants hereof, Landlord hereby leases to Tenant and Tenant hereby leases from Landlord the Premises for the Permitted Use. The Premises are comprised of the Net Rentable Area in the Building situated on the Land in the County of Durham, City of Durham, State of North Carolina, more particularly described on Exhibit A, attached hereto and incorporated herein by reference, together with all rights, privileges, easements, appurtenances and immunities belonging to or in any way pertaining to the Premises. Except as provided herein (and subject to latent defects not readily apparent through visual inspection and identified "punchlist" items, which Landlord shall repair within a reasonable amount of time), Tenant shall lease the Premises "as is" with no representations or warranties made by Landlord as to the condition of the Premises To the best of its knowledge, Landlord represents

and warrants that as of this date, the Premises are in material compliance with all Applicable Laws, and are in good condition and repair subject to reasonable wear and tear. In addition, Landlord shall use all reasonable efforts to insure that as of the Commencement Date (modified as provided herein), the Premises will be in material compliance with all Applicable Laws and are in good condition and repair. To the best of Landlord's knowledge, Applicable Laws and any recorded restrictive covenants permit the Premises to be used for the Permitted Use.

The Building is part of the Project and consists of a total of Eighty-Five Thousand Six Hundred and Twenty-Two (85,622) rentable square feet with the Building being comprised of Fifty One Thousand Six Hundred Sixty-Seven (51,667) rentable square feet. Landlord hereby represents and warrants to Tenant that the foregoing representations regarding rentable square feet are consistent with the definition of rentable area calculated pursuant to Building Owners and Managers Association Standards. A floor plan of the Premises is attached hereto and made a part hereof as Exhibit B. As an appurtenance to the Premises, Tenant, its employees and invitees will have the nonexclusive right to use the Common Areas at the Building.

Within five business days of the Commencement Date, Tenant will, upon demand of Landlord, execute and deliver to Landlord a letter of acceptance of delivery of the Premises (subject to latent defects not readily apparent through visual inspection and identified "punchlist" items, which Landlord shall repair within a reasonable amount of time), acknowledging the Commencement and Termination Dates of this Lease.

Except for any items the cost of which is paid out of the Tenant Improvement Allowance, Landlord shall perform, at its sole cost and expense, all work detailed on Exhibit C hereto. The upfit of the Premises, will be performed by Landlord in accordance with the Premises Specifications in the Work Letter, if applicable attached hereto and made a part hereof Exhibit D.

Subject to reasonable rules and regulations as Landlord may from time to time prescribe and subject to rights of ingress and egress of other tenants of the Project, Tenant and its invitees will have the right to the non-exclusive usage of twenty (20) parking spaces. Landlord will not be responsible for enforcing Tenant's parking rights against any third parties.

Tenant is granted a non-exclusive right to use, in common with the other tenants and users of the Project, all of the Common Areas. Landlord shall have exclusive control and management responsibility of the Common Areas. Landlord may, from time to time, alter the Common Areas, install kiosks, planters, fountains, sculptures, signs, and other structures within the Common Areas provided however that any such alterations shall not materially and adversely interfere with Tenant's use or enjoyment of the Premises or decrease Tenant's parking spaces. Landlord shall have the right to establish, modify, and enforce reasonable rules and regulations with respect to the Common Areas and to grant to individual tenants the right to conduct retail sales within the Common Areas. Landlord makes no representation or warranty concerning the size of the Common Areas and may, in the future, reduce the size of the Common Areas in its reasonable discretion, provided however that such reduction shall not materially and adversely interfere with Tenant's use or enjoyment of the Premises, and shall result in a commensurate reduction in Tenant's Proportionate Share.

Landlord hereby grants to Tenant a continuing right of first refusal to lease vacant and available space in the Building (the "Additional Space") under the terms and conditions as provided below:

(i) Subordinate to other tenants at the Project with pre-existing First Right of Refusal, and so long as there is no event of default by Tenant hereunder beyond any applicable grace and/or cure period, Landlord will notify Tenant when it has all or a portion of the Additional Space for lease to a third party (the "Third Party") and the terms and conditions upon which it is willing to lease such space ("Landlord's Notice").

(ii) Tenant shall provide written notice to Landlord, as to Tenant's decision to lease or not to lease the Additional Space within five (5) business days after Landlord's Notice is received. If Tenant does provide to Landlord notice to lease the Additional Space, Landlord and Tenant will execute a lease amendment adding the Additional Space to the Premises within twenty (20) days after Landlord's receipt of Tenant's notice of intent to lease on all the same terms provided to the Third Party. If Tenant does not provide written notice to Landlord within five (5) business days after receipt of the Landlord's Notice, Tenant will have been deemed to have waived its right to lease the Additional Space and Landlord shall be free to enter into a lease with the Third Party. Should all or any portion of the Additional Space become vacant thereafter, Tenant shall again have the right of first refusal provided herein.

(iii) The rights provided to Tenant in this Section are personal to the Tenant and may not be assigned in connection with an assignment of this Lease, subletting of the Premises or otherwise, except for any Permitted Transferee (as hereinafter defined).

4. Term. The Term of the Lease will begin on the Commencement Date and end on the Termination Date, unless sooner terminated or extended pursuant to the provisions hereof. The Commencement Date and Termination Date will be extended at the option of Landlord due to Force Majeure. Landlord shall use commercially reasonable measures to ensure that the Commencement Date is no later than October 1, 2010. In the event that the Commencement Date is later than February 1, 2011 for reasons other than a Tenant Delay or Force Majeure, and provided there is no default or event of default by Tenant hereunder, Tenant shall, by written notice to Landlord on or prior to February 6, 2011 (time being of the essence), have the right to terminate this Lease and all of its obligations hereunder (as of the date of giving such notice), and the parties hereto shall have no further obligation to each other hereunder.

Provided there is no default or event of default by Tenant hereunder at the time such rights are exercised or when a Renewal Term will commence, Tenant will have the option to extend the term of this Lease for two (2) Renewal Terms each of three (3) Lease Years by providing Landlord written notice of its desire to do so at least one hundred and eighty (180) days prior to the end of the then current term hereof. The date of the commencement of the Renewal Term will be the day after the expiration of the then current term of the Lease (unless sooner terminated as provided herein). All terms and conditions of this Lease will be in effect during the Renewal Term, except that (i) the Base Annual Rent will be the lesser of (a) ninety-five percent (95%) of the then market rate for comparable laboratory space in downtown Durham, as- determined in accordance with this Section 4, or (b) the increase in the CPI with a floor of two and one-half percent (2.5%) and a ceiling of three percent (3%) but in no event shall Base Annual Rent be less than that paid the previous Lease Year, and (ii) upon the exercise of the right to renew hereunder, a right of Tenant

to renew or extend the term hereof will have lapsed. Failure of Tenant to comply strictly with the provisions of this subparagraph will render the rights of Tenant in this subparagraph null and void. The rights granted to Tenant in this subparagraph are personal to Tenant and will not inure to the benefit of any successor or assign of Tenant, except for any Permitted Transferee.

The market rate shall mean the fair market base rent, without deduction for the cash value of free rent and leasehold improvements, which renewing, non-equity tenants are then receiving in connection with a lease for comparable space in the Durham, North Carolina area. Promptly following receipt by Landlord of Tenant's renewal notice, Landlord shall notify Tenant of the amount that, in Landlord's reasonable opinion, represents the market rate during the Renewal Term. Within fifteen (15) days of such notice, (a) if Tenant agrees, Tenant shall notify Landlord that Tenant so agrees that the Base Annual Rent therein provided constitutes the market rate, or (b) if Tenant disagrees, Tenant shall specify what Base Annual Rent, in Tenant's opinion, constitutes the market rate, or (c) if Tenant does not respond, Tenant shall be deemed to agree. In the event Tenant agrees, then the Base Annual Rent set forth in Landlord's said notice shall be deemed the market rate. In the event Tenant disagrees as provided in clause (b) above, the following procedure shall be used in determining the market rate: The parties shall use due diligence to attempt to agree upon the market rate within seven (7) business days following the foregoing fifteen (15) day period, but, if they do not so agree, then at the request of either party to the other (the "Initial Request"), the parties shall jointly choose a real estate broker (who shall have had at least ten (10) years experience as a broker in commercial office leasing in the Durham, North Carolina area) and who has not been employed by either party, whose decision shall be final and binding. If the parties do not agree upon such a third party broker and notify in writing the other thereof within seven (7) business days of the Initial Request, then within six (6) additional business days each party shall choose a real estate broker (having the foregoing credentials) and notify in writing the other thereof, and the joint decision of such real estate brokers regarding the market rate shall be final and binding (or, failing such notice, or if such choice is made, failing notice to the other within such six (6) additional business day period, the decision of one such real estate broker timely chosen and noticed shall be final and binding). If the two (2) real estate brokers timely chosen and noticed do not agree within seven (7) business days of the end of the six (6) business day period mentioned above during which they were chosen, then they shall choose a third such real estate broker (having the foregoing credentials) within five (5) business days, and the decision of such third real estate broker regarding the market rate shall be final and binding.

5. Rent. Beginning on the Rent Commencement Date and continuing thereafter throughout the Term, Tenant will pay the Rent in monthly installments in advance, without demand, deduction or offset, in lawful money of the United States commencing on the Rent Commencement Date, and continuing on the first day of each and every month thereafter until the Termination Date. Rent payments for any fractional calendar month at the end, or the beginning of the term of the Lease, will be prorated. In the event Tenant fails to pay any installment of Rent hereunder within ten days of the due date of such installment, Tenant will pay to Landlord on demand a late charge in an amount equal to four percent (4%) of such installment. The provision for such late charge will be in addition to all of Landlord's other rights and remedies hereunder or at law and will not be construed as liquidated damages or as limiting Landlord's remedies in any manner. Commencing with the second Lease Year hereunder, Base Annual Rent will increase on each

anniversary of the Rent Commencement Date by the Base Annual Rent Escalation over the Base Annual Rent paid the previous Lease Year.

Commencing January 1 of the year following the Commencement Date and continuing thereafter for each calendar year during the Term, Landlord will present to Tenant Tenant's Forecast Operating Expenses. Tenant will pay without deduction, offset, or counter claim, and otherwise in the same manner as Base Annual Rent on the first day of each calendar month during the Term, an amount equal to one twelfth (1/12) of Tenant's Forecast Operating Expenses as Additional Rent. From time to time during any calendar year, Landlord may revise Tenant's Forecast Operating Expense and adjust Tenant's monthly payments to reflect Landlord's such revisions. Promptly after the full execution of this Lease (and delivery to Tenant of a copy thereof), Tenant shall pay Landlord the first month's Rent due hereunder.

Notwithstanding the foregoing, and provided there is no default or event of default hereunder by Tenant, Base Annual Rent (but not Operating Expenses) shall be abated hereunder for the first five (5) months after the Commencement Date (the "Rent Abatement"). Tenant will be responsible for its Proportionate Share of the Operating Expenses for the Building as well as its utilities and janitorial services.

6. Operating Expenses. The accounting of the Operating Expenses will be performed in accordance with Generally Accepted Accounting Principles. For the purpose of calculating the Operating Expenses, no Controllable Expense will increase more than five percent (5%) over the charge paid by Tenant the previous Lease Year.

If the average occupancy rate of the Building Rentable Area will be less than ninety-five percent (95%) during any calendar year, or if any tenant is separately paying for (or does not require) electricity, janitorial, or other services furnished to its premises, then, for purposes of calculating Operating Expenses, the Operating Expenses for such period that vary with the level of occupancy of the Building or Project will be increased by the additional costs and expenses that Landlord reasonably estimates would have been incurred if the average occupancy rate had been ninety-five percent (95%) for such period. In no event will the Project tenants be required to pay, in the aggregate, more than 100% of the actual Operating Expenses of the Building or Project for any calendar year, and Tenant will not be required to pay more than one hundred percent (100%) of its Proportionate Share of the total increase in Operating Expenses actually incurred for the calendar year, with such actual Operating Expenses to be determined and payments reconciled through the process described above. At Tenant's written request, Landlord will provide information sufficient to disclose or quantify adjustments made to each category of Operating Expenses increased pursuant to the provisions of this Section. For the purpose of this Section, the term "Building" will be deemed to include the roof of the Building and any extensions therefrom, courtyards, sidewalks, landscaping, and all other areas, facilities, improvements, and appurtenances relating to any of the foregoing; provided, however, that Operating Expenses for the Building will not include Operating Expenses for the Project.

Within 120 days after the end of each calendar year, Landlord will submit to Tenant the Statement showing (i) the actual Tenant's Proportionate Share of the amount by which Operating Expenses incurred during the preceding calendar year exceed the Tenant's Forecast Operating Expenses, (ii)

the amount thereof paid by Tenant, and (iii) the balance due or the overpayment. If there is a balance due, Tenant will pay the balance due as Additional Rent within thirty (30) days following receipt of such Statement. If the Statement indicates an overpayment, then Landlord will credit the net overpayment toward Tenant's next estimated payment(s) pursuant to this Section or if at the end of the Term, will refund such excess to Tenant. Tenant or its designated representative, at its sole expense, will have the right once per calendar year during the Term to audit Landlord's books and records relating to the Operating Expenses for the immediately preceding calendar year. This audit must take place on a mutually agreeable date during reasonable business hours at Landlord's office at the address stated above and only after Tenant has given Landlord at least fourteen (14) calendar days prior written notice of the date and time Tenant desires to commence such audit. If Tenant elects to audit Landlord's books and records, Tenant will have the right to perform an audit of the Operating Expenses for the immediately preceding two (2) calendar years, such audit to be conducted by a reputable accounting firm reasonably approved by Landlord. If any such audit reveals an error by Landlord resulting in an overcharge to Tenant, then Landlord will promptly reimburse Tenant for the amount erroneously charged to Tenant. Likewise, if any such audit reveals an error resulting in Tenant being undercharged, then Tenant will promptly reimburse Landlord for the amount of such deficiency. If any audit performed by Tenant reveals that the Operating Expenses in total have been overstated by more than five percent (5%), Landlord will pay and/or reimburse Tenant for the cost of the audit not to exceed Two Thousand, Five Hundred Dollars ($2,500.00).

7. Utilities and Services.

(a) Landlord shall furnish connections for each utility to the Premises to include electricity, water and sewer, and telephone as specified in Exhibit C. Landlord shall not be liable in any respect for damages to person, property or otherwise due to the interruption in any utility to the Building, nor be construed as an eviction of Tenant, nor work an abatement of rent, nor relieve Tenant from fulfillment of any covenant or agreement hereof nor give rise to any right or remedy by Tenant unless caused by the gross negligence or willful misconduct of Landlord. Landlord shall provide conduit and boxes for phone and data at the Premises. Tenant shall bear the costs and be responsible for pulling cable for phone and data from the Demarcation closet (telephone closet) and providing cabling and jacks.

(b) Landlord shall provide the following services to Common Areas of the Building:

(i) Common Area Cleaning (M, W, T, F): (Restrooms, Halls, Stairs, Lobby, Elevator and Entrance):

Clean and restock restrooms on 1st and 2nd floors
Clean elevator
Sweep stairwell and spot mop for spills
Vacuum carpet
Dust mop hard surface floors and spot mop to remove spills
Clean entrance glass doors and sills
Dust security desk and Lobby furniture; and
Once Weekly: Dust and damp wipe stairwell railings.

(ii) Lights on throughout Common Areas throughout the business day and parking lot illuminated every night
(iii) Security guard on duty Monday through Friday 8-5
(iv) HVAC to condition Common Areas during each business day with override after-hours (HVAC annual service contracts included in Operating Expenses)
(v) Landscaping every 7-10 days with day porter services to patrol, weed and clean site three times week
(vi) Fire alarm and controlled access door system monitored 24/7 (contract paid through Operating Expenses)
(vii) Elevator preventative maintenance contract and service; and
(viii) Routine maintenance of common areas including, but not limited to, bulb replacements, door adjustments, HVAC adjustments, plumbing repairs, etc.

8. Direct Tenant Expenses. Tenant will arrange for the provision of service and shall pay directly to each service provider all charges for all electricity, gas, and other utilities, janitorial, telephone and internet/data used on or from the Premises, together with any taxes, penalties, surcharges or the like pertaining thereto.

9. Security Deposit. Promptly after the full execution of the Lease (with a copy thereof delivered to Tenant), Tenant will provide Landlord with an amount equal to six (6) months of the Base Annual Rent, Seventy-Three Thousand Eight Hundred Forty-Five and 45/100 dollars ($73,845.45) to be held as Security Deposit. Provided that Landlord reasonably approves the form and substance of such, Tenant may provide a Letter of Credit in lieu of cash. Any such Letter of Credit shall be irrevocable, unconditional, payable to the order of Landlord, from an issuer reasonably approved by Landlord, in place for the Term of the Lease and any Renewal Terms hereof, and be for the full amount of the Security Deposit. Landlord will not be required to apply all or any portion of the Security Deposit with respect to any particular violation or default by Tenant but Landlord may apply all or any portion (as reasonably required to effect a cure) of the Security Deposit to any violation, breach, or default by Tenant hereunder. Landlord will be entitled to hold the Security Deposit in an account maintained by Landlord for such funds from all tenants of Landlord. Any interest paid on such an account will become a part of the Security Deposit, accrue to the benefit of the Tenant (less any customary bank fees or charges for maintaining such account), and be delivered to Tenant upon termination of this Lease provided that the Security Deposit and interest thereon have not been applied by Landlord to an event of default hereunder. Tenant will reimburse Landlord for such portions of the Security Deposit as Landlord will from time to time apply with respect to any violation, breach, or default by Tenant hereunder promptly upon written notice of such application by Landlord. Any portion of the Security Deposit which has not been appropriated by Landlord in accordance with the provisions hereof will be returned to Tenant within thirty (30) days after the termination of this Lease.

If Landlord conveys Landlord's interest under this Lease, the Security Deposit, or any part thereof not previously applied, shall be released by Landlord to Landlord's grantee (to the extent not applied to any default by Tenant hereunder), and if so released, Tenant agrees to look solely to such grantee for the proper application and return thereof in accordance with the Lease provided that Tenant receives written notice of such conveyance. Tenant agrees that Tenant will not assign,

and that neither Landlord, nor its successors and assigns, will be bound by any such assignment, encumbrance or pledge, attempted assignment, attempted pledge, or attempted encumbrance of the Security Deposit.

Any mortgagee or ground lessor will not be responsible to Tenant for the return or application of the Security Deposit, whether or not it succeeds to the position of Landlord hereunder, unless the security deposit will have been received in hand by such mortgagee or ground lessor.

Any unperformed obligations of Landlord or Tenant under this Section will survive the termination of the Lease, for whatever reason, or any extension or renewal hereof.

Notwithstanding the foregoing and provided there is no default or event of default hereunder by Tenant (or if Tenant has committed a default or event of default more than one (1) time in any twelve (12) month period, then regardless of whether same has been cured), Landlord shall reduce the Security Deposit by the equivalent of one (1) month's Base Annual Rent, Twelve Thousand Three Hundred Seven and 58/100 dollars ($12,307.58) every three (3) months during the Lease Term commencing upon the later of (i) the satisfactory repayment of Tenant's loan as reported on Precision BioSciences, Inc. Balance Sheet dated January 8, 2010, or (ii) December 31, 2011, until such time that the equivalent of one (1) month's Base Annual Rent, Twelve Thousand Three Hundred Seven and 58/100 dollars ($12,307.58), remains as Security Deposit. With the third reduction of the Security Deposit, if paid as aforesaid, Landlord shall remit to Tenant the net interest that has accrued on the Security Deposit. Landlord shall provide Tenant written notice of any reduction in the Security Deposit and within five (5) business days thereafter, Tenant will be responsible for the re-issuance of an approved Letter of Credit each time that Security Deposit is eligible for reduction and until Tenant provides a re-issued Letter of Credit, Landlord shall have the right to use and draw upon the currently provided Letter of Credit.

10. Maintenance and Repairs. Landlord will maintain all Common Areas and Systems serving the Common Areas, the roof, downspouts, gutters, foundation, and the exterior walls (and any structural interior walls or other structural elements) of the Building in good repair, reasonable wear and tear excepted. Tenant will repair, replace and pay for, any damage to the foregoing caused by the negligence or misconduct of Tenant or any Tenant Party, or caused by Tenant's default hereunder. The term "walls" as used herein will not include windows, glass or plate glass, doors, special store fronts or office entries. Tenant will promptly give Landlord written notice of defect or need for repairs, after which Landlord will have reasonable opportunity to repair same or cure such defect. Landlord's liability with respect to any defects, repairs or maintenance for which Landlord is responsible under any of the provisions of this Lease will be limited to the cost of such repairs or maintenance or the curing of such defect.

Tenant will at its own cost and expense maintain, repair and replace the entirety of the Premises (except those for which Landlord is expressly responsible under the terms of this Lease) in as good condition as received (ordinary wear and tear excepted), promptly making all necessary repairs and replacements, including, but not limited to, heating, ventilation, cooling, plumbing, telecommunications, electrical and any other systems (the "Systems") within or serving the Premises, lighting fixtures, ballasts and bulbs, windows and window treatments, windows, glass and plate glass, doors, any special office entry, interior walls, finish work, and floors and floor

coverings within or serving the Premises unless any such damage is caused by parties other than Tenant or a Tenant Party. Landlord shall insure that the Systems will be in good working order and condition upon the Commencement Date. Landlord shall assign to Tenant all warranties that are legally assignable, and if not assignable, shall cooperate with Tenant to enforce such warranties. Landlord agrees to assign, to the extent legally assignable, any and all manufacturers' warranties for the Tenant Improvements, directly to the Tenant, which warranties shall include, but not be limited to, warranties for the Systems, which shall be the standard warranties available from the manufacturers. Additionally, Landlord acknowledges and agrees that any replacements made to any Systems, or any material components thereof (during the last 24 months of the then-existing Lease Term), shall be made by Landlord, and amortized over its useful life, and charged as a capital expense under the Operating Expense formula.

Subject to compliance with any notice and right to cure provisions contained in this Lease, if Tenant shall fail to fulfill its obligations under this Section, the Landlord may enter upon the area of the Building or the Premises as required to perform the obligations of the Tenant, and will be entitled to reimbursement from the Tenant for its actual costs and expenses in conducting such obligations. The Tenant will reimburse the Landlord for its actual costs and expense promptly upon demand made by the Landlord. The provisions of this subparagraph will not be interpreted to obligate the Landlord to perform obligations of the Tenant.

Tenant will not damage any demising wall of the Building, or disturb the integrity and support provided by any demising wall and will, at its sole cost and expense, promptly repair any damage or injury to any demising wall caused by Tenant or any Tenant Party.

11. Alterations. Except for the Tenant Improvements, Tenant will not make any alterations, additions or improvements to the Premises (including, but not limited to, roof and wall penetrations without the prior written consent of Landlord (not to be unreasonably withheld, or delayed). Tenant may, without the consent of Landlord, but at its own cost and expense and in a good workmanlike manner, erect such shelves, bins, machinery, movable lab benches, equipment, trade fixtures (defined as any fixtures used by Tenant in its specific business and not paid for by Landlord) and other non-structural interior improvements as it may deem advisable, without altering the basic character or structure of the Premises or improvements and without overloading or damaging the Premises or Building, and in each case complying with all Applicable Laws. Tenant will not make any alterations, additions or improvements to the Premises which will contravene Landlord's policies insuring against loss or damage by fire or other hazards, including but not limited to commercial general liability, or which will prevent Landlord from securing such policies in companies reasonably acceptable to Landlord. If any such alterations, additions or improvements cause the rate of fire or other insurance on the Premises by companies acceptable to Landlord to be increased beyond the minimum rate from time to time applicable to the Premises for permitted uses thereof (as reasonably documented by Landlord), Tenant will pay as Additional Rent the amount of any such increase promptly upon demand by Landlord. Within thirty (30) days receipt of reasonable documentation from Landlord following the completion of any alteration, addition, or improvement at the Premises by Tenant that requires the prior consent of Landlord, Landlord will be reimbursed for any reasonable outside consultant or design professional costs actually incurred by Landlord to review any plans or supervise construction work (not to exceed the lesser

of $1,500.00 or 5% of Tenant's "hard" construction costs). No such reimbursement will be required for any alteration, addition or improvement that does not require the consent of Landlord.

Any and all alterations, additions, improvements, partitions and fixtures erected by Tenant will be the property of Landlord and will remain at the Premises upon termination of the Lease or upon earlier vacating of the Premises. All shelves, bins, machinery, trade fixtures, and other interior non-structural improvements installed by Tenant will remain the personal property of Tenant and may be removed by Tenant prior to the termination of this Lease provided such removal may be accomplished without damage to the Premises or Building that cannot be repaired by Tenant as set forth in this subparagraph. Prior to vacating the Premises, Tenant will repair any damage to the Premises or Building as a result of any alteration, addition, improvement, or repair to the Premises, or the removal of personal property or trade fixtures by Tenant, or any Tenant Party. Should Tenant fail to conduct any such repair within ten (10) days of written notice from Landlord, Landlord may, at its option, perform same, and Tenant will remit payment to Landlord for the actual cost and expense incurred by Landlord in effecting such repair promptly upon demand.

Tenant will have no authority, express or implied, to create or place any lien or encumbrance of any kind or nature whatsoever upon, or in any manner to bind, the interest of Landlord in the Premises or to charge the rentals payable hereunder for any claim in favor of any person dealing with Tenant, including those who may furnish materials or perform labor for any construction or repairs, and each such claim will affect and each such lien will attach to, if at all, only the leasehold interest granted to Tenant by this instrument. Tenant covenants and agrees that it will pay or cause to be paid all sums legally due and payable by it on account of any labor performed or materials furnished in connection with any work performed on the Premises at the request of Tenant on which any lien is or can be validly and legally asserted against its leasehold interest in the Premises or the improvements thereon and that it will save and hold Landlord harmless from any and all loss, cost or expense based on or arising out of asserted claims or liens against the leasehold estate or against the right, title and interest of Landlord in the Premises or under the terms of this Lease.

12. Assignment and Subletting. Tenant may assign this Lease in its entirety or sublease all or any portion of the Premises without the consent of Landlord to (i) any entity resulting from a merger or consolidation with Tenant, (ii) any entity succeeding to all or substantially all of the business and assets of Tenant, or (iii) any company or professional corporation or association affiliated with, owned by, or under common corporate control with Tenant (each a "Permitted Transferee"); provided, however, that the financial capacity of the Permitted Transferee must be at least equal to that of the Tenant on the date of transfer and the transfer must not be effected by Tenant as a sham transaction or a means to circumvent the intent of this Section or adversely affect the liability of Tenant hereunder. Except as herein otherwise provided, Tenant may not assign or encumber this Lease or its interest in the Premises arising under this Lease, and may not sublet any part or all of the Premises without the prior consent of Landlord, which consent Landlord will not unreasonably withhold, or delay. For the purpose of the preceding sentence, the word "assign" will be defined and deemed to include the sale or other transfer of a controlling percentage (hereafter defined) of capital stock of Tenant other than to an affiliate or subsidiary or the sale of at least fifty-one percent (51%) of the value of the assets of Tenant. The phrase "controlling percentage" means the ownership of, and the right to vote, stock possessing at least fifty-one percent (51%) of the total combined voting power of all classes of Tenant's capital stock issued,

outstanding and entitled to vote for the election of directors, or such lesser percentage as is required to provide actual control over the affairs of the corporation. Acceptance of Rent by Landlord after any non-permitted assignment will not constitute approval thereof by Landlord. Notwithstanding any contrary provision contained herein, in no event will any assignment by Tenant of all or any interest in this Lease or any subletting of all or any part of the Premises result in Tenant being released from its obligations hereunder.

In no event will this Lease be assignable by operation of any law except as provided herein, and Tenant's rights hereunder may not become, and will not be listed by Tenant as an asset under any bankruptcy, insolvency or reorganization proceedings. Tenant is not, may not become, and will never represent itself to be an agent of Landlord, and Tenant acknowledges that Landlord's title is paramount, and that it can do nothing to affect or impair Landlord's title.

If this Lease will be assigned or the Premises or any portion thereof sublet by Tenant at a rental that exceeds the rentals to be paid to Landlord hereunder, then sixty-five percent (65%) of such excess (after reduction for any expenses incurred by Tenant in conjunction with such assignment or subletting) will be due to the Landlord, upon actual receipt by Tenant.

If Tenant desires to enter into any sublease of all or any portion of the Premises or assign its interest in this Lease, Landlord will have the option to exclude from the Premises the space proposed to be sublet by Tenant or if an assignment is proposed, the entire Premises. Such exclusion or recapture by Landlord will be effective as of the proposed commencement date of the sublease or assignment. Landlord may exercise said option by giving Tenant written notice within ten (10) business days after receipt by Landlord of Tenant's request for consent to the proposed sublease or assignment. If Landlord exercises said option, Tenant will surrender possession of such space to Landlord on the effective date of exclusion or recapture of such space and neither party hereto will have any future rights or liabilities with respect to said space under this Lease. Effective as of the date of exclusion of any portion of the Premises covered by this Lease pursuant to this paragraph, (i) the Base Annual Rent will be reduced in the same proportion as the number of square feet of Net Rentable Area contained in the portion of the Premises so excluded bears to the number of square feet of Net Rentable Area contained in the Premises immediately prior to such exclusion, and (ii) the Net Rentable Area of the Premises will be decreased by the number of square feet of Net Rentable Area contained in the portion of the Premises so excluded, for all purposes under this Lease.

Landlord and Tenant acknowledge and agree that the foregoing provisions have been freely negotiated by the parties hereto and that Landlord would not have entered into this Lease without Tenant's consent to the terms of this Section.

13. Insurance. Landlord agrees to maintain standard fire and extended coverage insurance for the Building (including the Tenant Improvements) in an amount not less than the replacement cost, insuring against special causes of loss, including, the perils of fire, and lightning, such coverages and endorsements to be as defined, provided and limited in the standard bureau forms prescribed by the insurance regulatory authority for the State of North Carolina. Subject to the provisions of this Lease, such insurance will be for the sole benefit of Landlord and under its sole control.

If the Premises should be damaged or destroyed by any peril covered by the insurance to be provided by Landlord according to this section, Tenant will give prompt written notice thereof to Landlord. This Lease will not terminate (except as specifically provided herein), and Landlord will, at its sole cost and expense, thereupon proceed with reasonable diligence to rebuild and repair the Premises to substantially the condition in which they existed prior to such damage, except that Landlord will not be required to rebuild, repair or replace any part of the partitions, fixtures, additions and other improvements which may have been placed in, on or about the Premises by Tenant (other than the Tenant Improvements). If the Premises are untenantable for the normal conduct of Tenant's business in whole or in part following such damage, the rent payable hereunder during the period in which they are untenantable will be reduced proportionately. If such repair work is not completed within one hundred eighty (180) days of such casualty, and provided there is no default or event of default hereunder by Tenant (or if Tenant has committed a default or event of default more than one (1) time in any twelve (12) month period, then regardless of whether same has been cured), then Tenant shall have the right to terminate this Lease upon written notice to Landlord (prior to actual completion of said work).

Landlord shall maintain contractual and comprehensive general liability insurance, including public liability and property damage, with a minimum combined single limit of liability of two million dollars ($2,000,000.00) for personal injuries or deaths of persons occurring in or about the Building and Premises.

Notwithstanding anything herein to the contrary, in the event the holder of any indebtedness secured by a mortgage or deed of trust covering the Premises requires that the insurance proceeds be applied to such indebtedness, and Landlord is unable to rebuild as confirmed by Landlord in writing to Tenant, then either Landlord or Tenant will have the right to terminate this Lease by delivering written notice of termination to the other party within fifteen (15) days after such requirement is made by any such holder, whereupon all rights and obligations hereunder thereafter accruing will cease and terminate.

Each of Landlord and Tenant hereby waives all rights to recover against each other or against any other tenant or occupant of the Building, or against the officers, directors, shareholders, partners, joint venturers, employees, agents, customers, invitees, or business visitors of each other or of any other tenant or occupant of the Building, for any loss or damage arising from any cause covered by any insurance required to be carried by each of them pursuant to this Lease, or any other insurance actually carried by either of them. Landlord and Tenant will cause their respective insurers to issue waiver of subrogation rights endorsements to all policies of insurance carried in connection with the Building or the Premises or the contents of either of them, and any cost for the issuance of such endorsements will be borne by the original insured under such policies.

The obligation of Landlord in this Section to repair and restore the Premises and the Building as provided herein, does not include an obligation of Landlord to repair the fixtures, equipment, or personal property of Tenant, which Tenant will insure for its benefit, and Tenant will have the obligation to repair and restore in the event of a casualty or other loss.

The period of time within which repair and restoration of the Premises must be completed will be extended due to delays occasioned by Force Majeure.

Tenant will procure and maintain, at its expense, (i) special form property insurance insuring against special causes of loss covering Tenant's personal property, equipment, trade fixtures and any improvements performed by Tenant (specifically excluding the Tenant Improvements) in the Premises; and (ii) a policy or policies of commercial general liability insurance applying to Tenant's operations and use of the Premises, providing a minimum limit of $1,000,000.00 per occurrence and $2,000,000.00 in the aggregate, naming Landlord and Landlord's property manager as additional insureds. Tenant will maintain the foregoing insurance coverages in effect commencing on the earlier to occur of the Commencement Date and the date Tenant takes possession of the Premises, and continuing to the end of the Lease Term.

The insurance requirements set forth in this Section are independent of the waiver, indemnification, and other obligations under this Lease and will not be construed or interpreted in any way to restrict, limit or modify the waiver, indemnification and other obligations or to in any way limit any party's liability under this Lease. In addition to the requirements set forth in this section, (i) the insurance required of Tenant under this Lease must be issued by an insurance company with a rating of no less than A-VIII in the current Best's Insurance Guide or that is otherwise reasonably acceptable to Landlord, and (ii) the company issuing the coverage must be authorized to conduct the business of insurance in the state in which the Building is located; (iii) the insurance must be primary insurance for all claims thereunder and provide that any liability insurance carried by Landlord, Landlord's property manager, and Landlord's lenders is strictly excess, secondary, and noncontributing with any insurance carried by Tenant; (iv) Tenant must insure that its insurance company shall endeavor to provide at least thirty (30) days prior written notice of cancellation or non-renewal of a policy to Landlord and Landlord's lenders; and (v) Tenant shall provide Landlord a copy of any notice of cancellation or non-renewal of a policy immediately upon receipt by Tenant. Tenant will deliver to Landlord a legally enforceable certificate of insurance on all policies procured by Tenant in compliance with Tenant's obligations under this Lease on or before the date Tenant first occupies any portion of the Premises, at least ten (10) days before the expiration date of any policy and upon the renewal of any policy. Landlord will have the right to approve all deductibles and self-insured retentions under Tenant's policies, which approval will not be unreasonably withheld, or delayed.

14. Condemnation. If the whole or any substantial portion of the Premises should be taken for any public or quasi-public use under governmental law, ordinance, or regulation, or by right of eminent domain, or by private purchase in lieu thereof, and the taking would prevent or materially interfere with the use of the Premises by Tenant for the purposes provided herein as mutually and reasonably determined by Landlord and Tenant, each party hereto will have the right to terminate this Lease by notice to the other party hereto within forty-five (45) days after the date of such taking and the Rent will be abated during the unexpired portion of this Lease, effective when the physical taking of the Premises will occur. If this Lease is not terminated in accordance with the foregoing, this Lease will remain in full force and effect as to the portion of the Premises remaining, except that the Rent will be reduced in the proportion that the taken floor area of the Premises bears to the total floor area of the Premises as reasonably determined by Landlord.

If a portion of the Premises will be taken for any public or quasi-public use under any governmental law, ordinance or regulation, or by right of eminent domain, or by private purchase in lieu thereof, and there is no material interference with the use by Tenant of the Premises as reasonably determined, this Lease will remain in full force and effect as to the portion of the Premises remaining, except that the Rent will be reduced in the proportion that the taken floor area of the Premises bears to the total floor area of the Premises.

In the event of any such taking or private purchase in lieu thereof, Landlord will be entitled to receive and retain all awards as may be awarded in any condemnation proceedings with Tenant hereby expressly waiving all claim thereto other than those specifically awarded Tenant for a taking of Tenant's personal property, loss of business and moving expenses.

15. Default. The following events will be deemed to be events of default by Tenant under this Lease:

(a) Tenant will fail to pay any installment of the Rent herein reserved, or payment with respect to taxes hereunder, or any other payment or reimbursement to Landlord required herein, within five (5) days of when due; provided, however, on one occasion during each calendar year of the term of this Lease, it shall not be an event of default hereunder if Tenant makes full payment within five (5) days after receipt of written notice from Landlord.

(b) Tenant will become insolvent, or will make a transfer in fraud of creditors, or will make an assignment for the benefit of creditors.

(c) Tenant will file a petition under any section or chapter of the Bankruptcy Reform Act, as amended or under any similar law or statute of the United States or any state thereof; or Tenant will be adjudged bankrupt or insolvent in proceedings filed against Tenant thereunder.

(d) A receiver or trustee will be appointed for all or substantially all of the assets of Tenant.

(e) Tenant will desert or vacate all or a portion of the Premises, and cease paying Rent at the Premises.

(f) Tenant will fail to yield up immediate possession of the Premises to Landlord upon termination of this Lease.

(g) Tenant will fail to comply with any term, provision or covenant of this Lease (other than the provisions of subparagraphs (a), (b), (c), (d), (e) and (f) of this Section 15), and will not cure such failure within thirty (30) days after written notice thereof to Tenant or such additional period of time as will be reasonably granted by Landlord if Tenant is acting in good faith and with diligence to complete such cure.

Upon the occurrence of any event of default in the preceding section hereof, Landlord will have the option to pursue any remedy at law or in equity, including, but not limited to, one or more of the following remedies without any separate notice or demand whatsoever:

(a) Terminate this Lease, in which event Tenant will immediately surrender the Premises to Landlord, and if Tenant fails to do so, Landlord may, without prejudice to any other remedy which it may have for possession or arrearage in Rent, enter upon and take possession of the Premises and expel and remove Tenant and any other person who may be occupying the Premises or any part thereof, by any legal means necessary without being liable for prosecution or any claim of damages therefore; secure the Premises against unauthorized entry; and Tenant agrees to pay to Landlord on demand the amount of all loss and damage which Landlord may

suffer by reason of such termination, whether through inability to relet the Premises on satisfactory terms or otherwise.

(b) Enter upon and take possession of the Premises and expel or remove Tenant and any other person who may be occupying such Premises or any part thereof, by any legal means necessary without being liable for prosecution and receive the Rent thereof; secure the Premises against unauthorized entry; store any property located on the Premises at the expense of the owner thereof and Tenant agrees to pay to Landlord on demand any deficiency that may arise by reason of such reletting. In the event Landlord is successful in reletting the Premises at a rental in excess of that agreed to be paid by Tenant pursuant to the terms of this Lease, Landlord and Tenant each mutually agree that Tenant will not be entitled, under any circumstances, to such excess rental, and Tenant does hereby specifically waive any claim to such excess rental.

(c) Enter upon the Premises, by any legal means necessary without being liable for prosecution or any claim for damages therefore, secure the Premises against unauthorized entry, remove all property of Tenant from the Premises and store it at the cost and expense of Tenant, and do whatever Tenant is obligated to do under the terms of this Lease; and Tenant agrees to reimburse Landlord on demand for any expenses which Landlord may incur in thus effecting compliance with Tenant's obligations under this Lease, and Tenant further agrees that Landlord will not be liable for any damages resulting to Tenant from such action, whether caused by the negligence of Landlord or otherwise.

(d) Subject to the obligation of Landlord to mitigate its damages under Applicable Law, accelerate and demand the payment of all Rent and other charges due and payable hereunder over the term of this Lease to an amount equal to the aggregate sum which at the time of such termination represents the excess, if any, of the present value of the aggregate Rent which would have been payable after the termination date had this Lease not been terminated, including, without limitation, the amount projected by Landlord as Rent for the remainder of the Lease Term, over the then present value of the then aggregate fair rent value of the Premises for the balance of the Lease Term, such present worth to be computed in each case on the basis of the lesser of: (i) the rate on a United States Treasury bill with a maturity date equal to the termination date of the Lease, or (ii) five percent (5%) per annum discount from the respective dates upon which such Rent would have been payable hereunder had this Lease not been terminated.

Landlord's failure to perform or observe any of its Lease obligations after a period of thirty (30) days or the additional time, if any, that is reasonably necessary to promptly and diligently cure the failure after receiving written notice from Tenant is a Landlord Default. The notice shall reasonably detail the nature and extent of the failure and identify the Lease provision(s) containing the obligation(s). If Landlord commits a Landlord Default, Tenant may pursue any remedies given in this Lease or under Applicable Law.

Pursuit of any of the foregoing remedies will not preclude pursuit of any of the other remedies herein provided or any other remedies provided by law or equity, nor will pursuit of any remedy herein provided constitute a forfeiture or waiver of any Rent due to Landlord hereunder or of any damages accruing to Landlord by reason of the violation of any of the terms,

provisions and covenants herein contained. No act or thing done by Landlord or its agents during the term hereby granted will be deemed a termination of this Lease or an acceptance of the surrender of the Premises, and no agreement to terminate this Lease or accept a surrender of the Premises will be valid unless in writing signed by Landlord. No waiver by Landlord or Tenant of any violation or breach of any of the terms, provisions and covenants herein contained will be deemed or construed to constitute a waiver of any other violation or breach of any of the terms, provisions and covenants herein contained. Landlord's acceptance of the payment of rental or other payments hereunder after the occurrence of an event of default will not be construed as a waiver of such default, unless Landlord so notifies Tenant in writing, and no receipt of money by Landlord from Tenant after the termination of this Lease or after service of any notice or after the commencement of any suit or after final judgment for possession of the Premises will reinstate, continue or extend the term of this Lease or affect any such termination, notice, suit or judgment, unless Landlord so notifies Tenant in writing. Forbearance by Landlord or Tenant to enforce one or more of the remedies herein provided upon an event of default will not be deemed or construed to constitute waiver of such default or of said party's right to enforce any such remedies with respect to such default or any subsequent default.

Notwithstanding any provision contained in this Lease to the contrary, should either party institute any legal proceeding against the other for breach of any provision herein contained and prevail in such action, such other party shall reimburse the prevailing party for the expenses of such prevailing party, including, without limitation, its reasonable attorneys' fees actually incurred at standard and reasonable billing rates.

16.Holding Over and Termination. Tenant will upon the termination of this Lease by lapse of time or otherwise, yield up immediate possession to Landlord without the requirement of notice by Landlord to Tenant of the termination of this Lease, nor any grace or cure period should Tenant fail to yield up immediate possession to Landlord. Unless the parties hereto will otherwise agree in writing, if Landlord agrees in writing that Tenant may hold over after the expiration or termination of this Lease, the hold over tenancy will be subject to termination by Landlord at any time upon thirty (30) days advance written notice, or by Tenant at any time upon not less than thirty (30) days advance written notice, and all of the other terms and provisions of this Lease will be applicable during that period, except that Tenant will pay Landlord from time to time upon demand, as rental for the period of any hold over, an amount equal to one and one-half (1-1/2) the Base Annual Rent plus Additional Rent in effect on the Termination Date, computed on a daily basis for each day of the hold over period. No holding over by Tenant, whether with or without consent of Landlord, will operate to extend this Lease except as otherwise expressly provided. The preceding provisions of this Section 16 will not be construed as Landlord's consent for Tenant to hold over.

Upon the termination of this Lease for whatever reason, Tenant will quit and immediately surrender the Premises to Landlord, broom clean, in as good order and condition as received with all repairs and maintenance required by Tenant hereunder having been performed, ordinary wear and tear excepted, and Tenant will remove its personal property from the Premises in accordance with this Lease. Should any of the personal property or trade fixtures of Tenant remain upon the Premises after the Termination Date, all such property will be

deemed abandoned by Tenant, and Landlord may remove same at the cost and expense of Tenant with no liability to Tenant therefore, and Tenant hereby releases Landlord from all liability therefore.

17.Compliance with Laws. The Premises will be used only for the Permitted Use. Landlord acknowledges that Tenant will be using the Premises as a laboratory for a biotechnology company and is aware that with respect to such usage, Tenant may bring a pre-approved list of Hazardous Materials onto the Premises. Tenant will conduct no activity that will result in the discharge of harmful gases, effluents or other wastes or toxic substances beyond the Premises or in violation of Applicable Laws. Outside storage, including, without limitation, trucks and other vehicles, is prohibited without Landlord's prior written consent. Tenant will at its sole cost and expense obtain any and all licenses and permits necessary for its use of the Premises. Tenant will promptly comply with all governmental orders and directives for the correction, prevention, and abatement of nuisances connected with or arising from Tenant's use of the Premises, all at Tenant's sole expense. During the Term, Landlord shall comply with all Applicable Laws regarding the Premises and Building, except to the extent Tenant must comply under this Section 17. Except as to pre-existing defects, violations or conditions, Tenant shall comply with all Applicable Laws: (i) regarding the physical condition of the Premises, but only to the extent the Applicable Laws pertain to the particular manner in which Tenant uses the Premises; or (ii) that do not relate to the physical condition of the Premises but relate to the lawful use of the Premises and with which only the occupant can comply, such as laws governing maximum occupancy, workplace smoking, and illegal business operations, such as gambling. Tenant will not permit any objectionable or unpleasant odors, smoke, dust, gas, noise or vibrations to emanate from the Premises, nor take any other action which would constitute a nuisance, disturb or endanger any other tenants of the Building, or unreasonably interfere with the quiet enjoyment by any tenant of the Building. Without Landlord's prior written consent (not to be unreasonably withheld, or delayed), Tenant will not receive, store or otherwise handle any product, material or merchandise which is explosive, inflammable, combustible, corrosive, caustic or poisonous (except as provided herein). Tenant will not permit the Premises to be used for any purpose or in any manner (including, without limitation, any method of storage) which would render the insurance thereon void or the insurance risk more hazardous or cause the State Board of Insurance or other insurance authority to disallow any sprinkler credits. Tenant will give notice to Landlord promptly upon the known occurrence of any accident in the Premises or upon Tenant's discovery of any defects thereon or in any fixtures or equipment located therein or upon the occurrence of any emergency in the Premises, Building, or Project. Tenant will be permitted to use and store at the Premises in compliance with Hazardous Material Laws and the provisions hereof commercially reasonable quantities of (i) generally available standard office and janitorial supplies that may contain chemicals categorized as Hazardous Material, and (ii) such other substances that are required in the ordinary course of Tenant's business conducted on the Premises. Tenant, at its expense, in its use of the Premises and in making any alterations, renovations, or modifications of the Premises will comply with all Applicable Laws relating to the use, condition and occupancy of the Premises.

Tenant agrees that it will not release, discharge, place, hold, or dispose of any Hazardous Material on, under or at the Premises, in the Building, or on the Land, and that it will not use

the Premises, the Building, the Land, or any other portion thereof as a site for the treatment, storage (except in accordance with this Section 17), or disposal (whether permanent or temporary) of any Hazardous Material. Tenant further agrees that it will not cause or allow any asbestos to be incorporated into any improvements or alterations which Tenant makes or causes to be made to the Premises, or the Building.

Tenant hereby agrees to indemnify, defend (with counsel reasonably approved by Landlord) and hold harmless Landlord of from and against any and all losses, liabilities, damages, injuries, costs, expenses and claims of any and every kind whatsoever (including without limitation, court costs and attorneys' fees at all tribunal levels) which at any time and from time to time may be paid, incurred or suffered by, or asserted against Landlord for, with respect to, or as a direct or indirect result of any breach or default by Tenant of the provisions of this Section 17. The provisions of and undertakings and indemnification set forth in this Section will survive the termination or expiration of this Lease, for any reason, and will continue to be the liability, obligation and indemnification of Tenant, binding upon Tenant forever. The provisions of the preceding sentence will govern and control over any inconsistent provision of this Lease.

Tenant will provide Landlord with a list of any and all Hazardous Materials released, discharged, placed, held, or disposed of on the Premises, and certification to Landlord of compliance by Tenant with all Applicable Laws, concurrently with the execution of this Lease which shall be attached hereto and made a part as Exhibit G, and thereafter, within ten (10) business days of a request therefore by Landlord (which Landlord shall not request more than four times in any calendar year).

Landlord hereby represents and warrants, to the best of Landlord's actual knowledge, that no Hazardous Materials exist on, under, in or about the Premises as of the Commencement Date except as disclosed in the Phase I Environmental Site Assessment obtained by Landlord for the Building (the "Report"). Tenant shall have the right to review the Report at the offices of Landlord upon written notice to the Landlord. Landlord shall indemnify, defend and hold harmless Tenant from and against any and all Claims which at any time and from time to time may be paid, incurred or suffered by or assessed against Tenant as a direct or indirect result of the presence of any Hazardous Materials in, on or under the Premises, Building or Project prior to the Commencement Date or after the termination of this Lease so long as such presence was not due to an act or omission of Tenant or a Tenant Party.

18.Inspection. Landlord and Landlord's agents and representatives will have the right to enter and inspect the Premises at any reasonable time during business hours, for the purpose of ascertaining the condition of the Premises, in order to make such repairs as may be required or permitted to be made by Landlord to the Building or any adjacent space, under the terms of this Lease, or in order to show the Premises to any prospective purchaser or lender; provided that (i) except in the case of an emergency, Landlord has given Tenant a written or verbal notice of the intent to enter at least two (2) business days in advance of the entry, (ii) such entry and any related inspection or repairs do not unreasonably interfere with Tenant's business operations, (iii) Landlord complies with Tenant's reasonable security measures and protocols which are detailed on Exhibit F (as Tenant shall be entitled to reasonably update), attached

hereto, and Tenant provides Landlord protective gear, and (iv) Landlord is accompanied by a representative of Tenant at all times, except in an emergency. During the period that is six (6) months prior to the end of the term hereof (and subject to the same access caveats listed above), Landlord and Landlord's agents and representatives will have the right to enter the Premises at any reasonable time during business hours for the purpose of showing the Premises to any prospective tenant and will have the right to erect on the Premises a suitable sign indicating the Premises are available. Tenant will schedule with Landlord (at Landlord's request) at least sixty (60) days prior to vacating the Premises a time mutually agreeable to the parties hereto for a joint inspection of the Premises prior to vacating. In the event of Tenant's failure to reasonably arrange such joint inspection, Landlord's inspection at or after Tenant's vacating the Premises will be conclusively deemed correct for purposes of determining Tenant's responsibilities for repairs and restoration.

19. Tenant Property. Upon reasonable request, so long as Tenant is not in default under this Lease, Landlord agrees to execute, within twenty (20) days following written request, any commercially reasonable document reflecting the subordination of any such Landlord's interest to Tenant's lender(s) and in such event Tenant shall pay Landlord's reasonable and actual "out-of-pocket" costs therefore.

20. [INTENTIONALLY DELETED.]

21.Rules and Regulations. Tenant, at its expense, will comply with the Rules and Regulations of the Building attached hereto and made a part hereof as Exhibit E, as reasonably modified by Landlord from time to time and such other Rules and Regulations adopted by Landlord during the Lease Term and Tenant will use all commercially reasonable efforts to cause all Tenant Parties to do so. Provided, however, that (a) such rules and regulations do not increase the Rent payable hereunder; (b) such rules and regulations do not unreasonably and materially interfere with Tenant's conduct of its business or Tenant's use and enjoyment of the Premises for the Permitted Use; (c) Landlord provides reasonable advance written notice thereof; and (d) such rules and regulations are uniformly enforced in a non-discriminatory manner. All such additions or changes to Rules and Regulations will be sent by Landlord to Tenant in writing and shall become effective ten (10) days thereafter. In the event of a conflict between the rules and regulations and the terms of this Lease, the terms of this Lease will control.

22.Assignments by Landlord. Landlord will have the right to transfer and assign, in whole or in part, all its rights and obligations hereunder and in the Building and Project, and in such event and upon its transferee's assumption of Landlord's obligations thereafter accruing hereunder, no further liability or obligation will thereafter accrue against Landlord hereunder (provided that any such successor in interest expressly assumes the obligations of Landlord hereunder, in writing). Upon request by Landlord, Tenant agrees to execute a certificate certifying such facts as Landlord may reasonably require in connection with any such assignment by Landlord. This paragraph shall not affect Landlord's liability for matters arising prior to the transfer of the Building including the Security Deposit.

23.Quiet Enjoyment. Landlord represents and warrants that it has full right and authority to enter into this Lease and that Tenant, upon paying the rental herein set forth and performing its other covenants and agreements herein set forth, will peaceably and quietly have, hold and enjoy the Premises for the term hereof without hindrance or molestation from Landlord or any other lawful claimant to ownership or possession of the Premises, subject to the terms and provisions of this Lease.

24.Liability. Tenant specifically agrees to look solely to Landlord's (or its successors') interest in the Building (including rental income and insurance/condemnation proceeds) for the recovery of any judgment (or other judicial decree) from Landlord. Landlord (or if Landlord is a limited liability company, its members, or if Landlord is a corporation, its directors, officers or any successors in interest) shall never be personally liable for any such judgment. In no event shall Landlord be liable under this Lease for any consequential or punitive damages except to the extent caused by the gross negligence or willful misconduct of Landlord. This exculpation of liability to be absolute and without exception whatsoever.

Landlord will not be liable to Tenant or any Tenant Party, or to any other person whomsoever, for any damage to property on or about the Premises belonging to Tenant or any other person, due to any cause whatsoever, unless caused by the gross negligence or willful or intentional misconduct of Landlord.

Tenant hereby covenants and agrees that it will at all times indemnify, defend (with counsel reasonably approved by Landlord) and hold safe and harmless Landlord (including, without limitation, its trustees and beneficiaries if Landlord is a trust), and the Landlord Parties from any loss, liability, claims, suits, costs, expenses, including without limitation reasonable attorney's fees and damages, both real and alleged, incurred by Landlord or a Landlord Party arising out of or resulting from the negligence or misconduct of Tenant, a breach by Tenant of any provision of this Lease, or the conduct by Tenant of its business in the Building.

Landlord hereby covenants and agrees that it will at all times indemnify, defend (with counsel reasonably approved by Tenant) and hold safe and harmless Tenant, and the Tenant Parties from any loss, liability, claims, suits, costs, expenses, including without limitation reasonable attorney's fees and damages, both real and alleged, incurred by Tenant or a Tenant Party arising out of or resulting from the operation by Landlord of the Building, the negligence or misconduct of Landlord, or a breach by Landlord of any provision of this Lease.

25.Mortgages. Tenant accepts this Lease subject and subordinate to any mortgage(s) and/or deed(s) of trust now or at any time hereafter constituting a lien or charge upon the Premises or the improvements situated thereon; provided, however, that if the mortgagee, trustee, or holder of any such mortgage or deed of trust elects to have Tenant's interest in this Lease superior to any such instrument, then by notice to Tenant from such mortgagee, trustee or holder, this Lease will be deemed superior to such lien, whether this Lease was executed before or after said mortgage or deed of trust. Tenant will at any time hereafter on demand execute and provide to Landlord within ten (10) business days of a request therefore, any commercially reasonable instruments, releases or other documents which may be reasonably required by any mortgagee or trustee for the purpose of further subjecting and subordinating this Lease to the

lien of any such mortgage or deed to trust in form and substance as reasonably required by such mortgagee or trustee. Notwithstanding the foregoing, it shall be a condition precedent to any subordination that Tenant be provided with a written non-disturbance agreement in the form stipulated by Landlord's lender (provided that: (i) Tenant shall be entitled to request of Landlord's lender commercially reasonable revisions to said form at its cost which costs include payment of any attorneys' fees charged to Landlord by Landlord's lender (as reasonably documented by Landlord); and (ii) said form provides that, if the holder of any mortgage or deed of trust shall take title to the Premises through foreclosure or deed in lieu of foreclosure or otherwise, Tenant shall be allowed to continue in possession of the Premises as provided in this Lease so long as Tenant is not in default, beyond any applicable cure period).

26. Signs. Tenant will not be permitted any signage visible from outside of its Premises which has not been approved in writing in advance by Landlord in its reasonable discretion. The cost of or related to any approved signage will be entirely at Tenant's own expense, and all such signage shall be removed by Tenant, at its cost at the end of the term and any damage due to such removal repaired by Tenant prior to vacating the Premises. Landlord shall provide at its expense signage on the entry door to the Premises, and signage on the directory for the Building. Landlord shall provide Tenant its exterior signage criteria prior to the execution of this Lease.

27. Keys and Locks. Landlord, at its expense, shall provide Tenant with forty (40) card keys for access to the Building. Landlord acknowledges that Tenant shall have the right to install its own access control system to the Premises and Tenant shall furnish and provide Landlord with duplicate keys and/or access cards, as applicable, to ensure that Landlord and its representatives can gain access to the Premises when permitted by the terms of this Lease. Upon termination of this Lease, Tenant shall surrender to Landlord all keys to the Premises and give to Landlord the combination of all locks for safes, safe cabinets and vault doors, if any, remaining in the Premises.

28.Brokers. Landlord acknowledges that Cassidy Turley (and its successors and assigns) is acting as the sole agent for Tenant in this transaction and shall be paid a brokerage fee by Landlord pursuant to a separate agreement with Landlord. Tenant confirms that no broker other than Cassidy Turley is assisting Tenant in this matter. Landlord confirms that no broker is assisting Landlord in this matter. Landlord and Tenant covenant to pay, hold harmless and indemnify the other from and against any and all costs, expenses or liability for any compensation, commissions and charges claimed by any other broker or agent, with respect to the transactions contemplated hereby or the negotiation thereof and arising by virtue of the acts of the indemnifying party.

29.Notices. Each provision of this instrument or of any Applicable Law with reference to the sending, mailing, or delivery of any notice by either party, or with reference to the making of any payment by Tenant to Landlord will be deemed to be complied with when and if the following steps are taken:

(a) All Rent and other payments required to be made by Tenant to Landlord hereunder will be payable to Landlord at the address below or at such other address as Landlord may

specify from time to time by written notice delivered in accordance herewith. Tenant's obligations to pay Rent and any other amounts to Landlord under the terms of this Lease will not be deemed satisfied until such Rent and other amounts have been actually received by Landlord.

(b) Any notice or document required or permitted to be delivered hereunder will be deemed to be delivered upon actual receipt or refusal thereof, and shall be: (i) sent by standard, commercial overnight delivery service, such as Federal Express, or (ii) sent by Certified or Registered Mail, return receipt requested, postage prepaid, and addressed to the parties hereto at the respective addresses set out below, or at other such addresses as they have heretofore specified by written notice delivered in accordance therewith.

Landlord:
Venable Tenant LLC
c/o Scientific Properties, LLC
280 Mangum Street, Suite 340
Durham, NC 27701

Tenant:
Precision BioSciences, Inc.
104 T. W. Alexander Drive
PO Box 12292
Research Triangle Park, NC 27709
Attention: Todd Melby, Chief Financial Officer/Chief Operations Officer

with a copy to:

Smith, Anderson, Blount, Dorsett,
Mitchell & Jernigan, L.L.P.
Post Office Box 2611
Raleigh, North Carolina 27602-2611
Attention: Michael P. Saber, Esq.

overnight delivery address:
2500 Wachovia Capitol Center
150 Fayetteville Street
Raleigh, North Carolina 27601

30.Miscellaneous.
(a) Words of any gender used in this Lease will be held and construed to include any other gender, and words in the singular number will be held to include the plural, unless the context otherwise requires.
(b) The terms, provisions and covenants and conditions contained in this Lease will apply to, inure to the benefit of, and be binding upon the parties hereto and upon their respective heirs, legal representatives, successors and permitted assigns, except as otherwise herein expressly provided. Landlord will have the right to assign any of its rights and obligations under this

Lease. Each party agrees to furnish to the other, promptly upon demand, a resolution, or other appropriate documentation evidencing the due authorization of such party to enter into this Lease.

(c) The captions inserted in this Lease are for convenience only and in no way define, limit or otherwise describe the scope or intent of this Lease, or any provision hereof, or in any way affect the interpretation of this Lease.

(d) Tenant agrees from time to time, within ten (10) business days after request of Landlord, to deliver to Landlord, or Landlord's designee, an estoppel certificate stating, to the extent true and to Tenant's actual knowledge, that this Lease is in full force and effect, the date to which Rent has been paid, the unexpired term of this Lease and such other matters pertaining to this Lease as may be reasonably requested by Landlord. It is understood and agreed that Tenant's obligation to furnish such estoppel certificates in a timely fashion is a material inducement for Landlord's execution of this Lease.

(e) This Lease may not be altered, changed or amended except by an instrument in writing signed by both parties hereto.

(f) All obligations of Landlord and Tenant hereunder not fully performed as of the expiration or earlier termination of the term of this Lease will survive the expiration or earlier termination of the term hereof, including, without limitation, all payment obligations concerning the condition of the Premises and all obligations of Tenant as provided in Section 5 hereof.

(g) In the case of a foreclosure or deed in lieu of foreclosure on a mortgage or deed of trust existing prior to the date of this Lease, in the event of a transfer by Landlord of its interest in the Premises, Landlord will be released from all obligations and liabilities under the terms of this Lease arising subsequent to the date of such transfer. In the event a transferee will agree to assume the obligations and liabilities of Landlord under the Lease prior to the date of the transfer, Landlord will be released from all obligations and liabilities under the Lease.

(h) If any clause or provision of this Lease is illegal, invalid or unenforceable under present or future laws effective during the term of this Lease, then and in that event, it is the intention of the parties hereto that the remainder of this Lease will not be affected thereby, and it is also the intention of the parties to this Lease that in lieu of each clause or provision of this Lease that is illegal, invalid or unenforceable, there be added as a part of this Lease a clause or provision as similar in terms to such illegal, invalid or unenforceable clause or provision as may be possible and be legal, valid and enforceable.

(i) Because the Premises are on the open market and are presently being shown, this Lease will be treated as an offer with the Premises being subject to prior lease and such offer subject to the withdrawal or non-acceptance by Landlord or to other use of the Premises without notice, and this Lease will not be valid or binding unless and until accepted by Landlord in writing and a fully executed copy delivered to both parties hereto.

(j) All references in this Lease to "the date hereof" or similar references will be deemed to refer to the last date, in point of time, on which all parties hereto have executed this Lease.

(k) Time is of the essence of this Lease.

(l) Landlord will not be in default in the performance of any of Landlord's obligations hereunder unless and until Landlord will have failed to perform such duties or obligations within thirty (30) days (or such additional time as is reasonably required to correct any such default) after written notice by Tenant to Landlord properly specifying wherein Landlord has failed to perform any such duty or obligation. In cases where there is an imminent threat of harm to person or property at the Premises, or if Tenant cannot conduct its business at the

Premises, Landlord shall effect a cure within a reasonable period of time using all reasonable efforts. Should a cure be required and Landlord fail to effect a cure within ten (10) business days after the date after receipt by Landlord from Tenant of written notice with respect to such default, Tenant shall have the right to effect such cure. Except as expressly provided in this Lease to the contrary, Landlord will have no liability for any incidental or consequential damages of Tenant, or anyone claiming by, through or under Tenant, for any reason whatsoever.

(m) This Lease does not create the relationship of partner or joint venturer between Landlord and Tenant.

(n) The laws of the State of North Carolina will govern the interpretation, the validity, performance and enforcement of this Lease.

(o) (i) If Tenant is a corporation, the undersigned officer of Tenant does hereby warrant and certify to Landlord that Tenant is a corporation in good standing and duly organized under the laws of the State of North Carolina, or if chartered in a state other than the State of North Carolina, is a corporation in good standing and duly organized under the laws of such state and is authorized to do business in the State of North Carolina. The undersigned officer of Tenant hereby further warrants and certifies to Landlord that such officer is authorized and empowered to bind the corporation to the terms of this Lease by such officer's signature hereto; (ii) If Tenant is a general or limited partnership, the undersigned general partner of Tenant does hereby warrant and certify to Landlord that Tenant is a general partnership or limited partnership, as the case may be, validly existing under the laws of the State of North Carolina, or if formed in a state other than the State of North Carolina, is a general partnership or limited partnership validly existing under the laws of such state and is authorized to do business in the State of North Carolina. The undersigned general partner of Tenant hereby further warrants and certifies to Landlord that such general partner is authorized and empowered to bind Tenant to the terms of this Lease by such general partner's signature hereto. (iii) Landlord confirms that those persons signing below on its behalf are duly authorized to do so.

(p) The provisions of any Exhibits referenced herein, whether or not attached hereto, are incorporated herein by reference and made a part of this Lease.

(q) Although the printed provisions of this Lease were drafted by Landlord, such fact will not cause this Lease to be construed either for or against Landlord or Tenant.

(r) This Lease may not be recorded. Upon the request and at the expense of Tenant, Landlord will execute a memorandum of this Lease suitable for recording which will omit the financial terms herein but which will identify the Premises, the Parties, and the term of this Lease. Upon the expiration of this Lease, a recorded memorandum of this Lease may be canceled of record by a document executed by Landlord, or its successor in interest for such purpose.

(s) Tenant will provide to Landlord within ninety (90) days of the close of its fiscal year, and thereafter within ten (10 business days of the reasonable request of Landlord, but no more than once per calendar year except during any default or event of default by Tenant when this limitation shall not apply, financial statements of Tenant (consisting of summarized profit and loss statement, balance sheet, and cash flow statement) certified by the chief financial officer of Tenant.

(t) No remedy conferred herein is intended to be exclusive of any other remedy and each and every remedy will be cumulative and will be in addition to every other remedy given hereunder or thereunder or now or hereafter existing at law or in equity or by statute or otherwise.

(u) [INTENTIONALLY DELETED.]

(v) Tenant, its employees, and invitees shall have access to the Premises twenty-four (24) hours a day, seven (7) days a week.
(w) The provisions of this Lease and any information regarding Landlord, including its construction process, and the materials and standards used, will be maintained confidential by Tenant, its agents, employees, officers, and legal and tax advisors.
(x) Tenant shall be responsible for all ad valorem taxes on its personal property and on the value of the leasehold improvements to the extent that such improvements do not constitute fixtures, or additions or improvements to real property (as reasonably documented by Landlord). Tenant, within thirty (30) days of receipt of an invoice, shall also pay to Landlord all sales or use taxes or excise taxes imposed or levied by the State of North Carolina or any other governmental body or agency, if any, against any rent or any other charge or payment required hereunder to be made by Tenant to Landlord.
(y) This Lease does not grant any rights to light, view or air over adjacent property, and any diminution or shutting off of light, view or air by any structure that may be erected adjacent to the Building shall not affect this Lease or impose any obligation or liability upon Landlord.
(z) In coordination with the General Contractor and Landlord's Construction Manager and in compliance with the procedures required for them, Tenant shall be permitted reasonable access to the Premises prior to the Commencement Date for the purposes of taking measurements, making plans, installing trade fixtures, and doing such other work as may be appropriate or desirable to enable Tenant to assume possession of and operate in the Premises; provided, however, that such access does not unreasonably interfere with or delay construction work on the Premises and if Tenant shall unreasonably interfere with or delay construction work on the Premises, Landlord shall have the right to deny the Tenant access to the Premises. Prior to any such entry, Tenant shall comply with all insurance provisions of the Lease. All waiver and indemnity provisions of the Lease shall apply upon Tenant’s entry onto the Premises.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties hereto have duly executed this Lease as of the day and year first set forth above.

LANDLORD:

VENABLE TENANT, LLC

By: SCIENTIFIC PROPERTIES, LLC

By: /s/ Barbra Rothschild Date: 7/6/10
Barbra Rothschild, Manager

TENANT:

PRECISION BIOSCIENCES, INC.

By: /s/ Todd Melby Date: 4-2-10
Todd Melby, Chief Financial Officer / Chief Operations Officer

EXHIBIT A

THE LAND

BEGINNING at an existing PK nail in the western right of way of Pettigrew Street (100' public r/w) and the eastern right of way of Roxboro Street, thence running south along said western right of way along the arc of a circular curve with a radius of 2125.0 feet, a chord length of 52.03 feet, subtended by a chord that bears S 42º37'26"E, for an arc length of 52.04 feet to an existing iron pipe, thence continuing along said right of way along the arc of a circular curve with a radius of 2125.0 feet, a chord length of 124.74 feet, subtended by a chord that bears S40º30'08"E, for an arc length of 124.76 feet to an existing PK nail, being the northwestern corner of Durham Foundry & Machine property, thence running along said property S45º24'44"W for a distance of 175.48 feet to an existing iron pipe, thence continuing with said property S41'05'06"E for a distance of 71.0 feet to an iron pipe set, thence continuing with said property N47º22'04"E for a distance of 30.62 feet to an iron pipe set, thence continuing with said property S41º29'07"E for a distance of 60.52 feet to an iron pipe set, thence continuing with said property N52º25'05"E for a distance of 133.09 feet to an existing PK nail in the western right of way of Pettigrew Street, thence running along said right of way along the arc of a circular curve with a radius of 2125.0 feet, a chord length of 81.56 feet, subtended by a chord that bears S33'40'35"E, for an arc length of 81.57 feet to an existing iron pipe, thence running S50º19'45"W for a distance of 151.69 feet to an existing iron pipe, thence running S41º34'48E for a distance of 79.86 feet to an existing iron pipe, thence running along the western 30 foot Ingress/Egress Easement with Hendrick Automotive Group S35º06'35"W for a distance of 119.31 feet to an iron pipe set, thence running with the northern property line of Thomas and Howard of Greensboro N42º54'51"W for a distance of 48.93 feet to an iron pipe set, thence continuing with said property N64º41'55"W for a distance of 246.14 feet to an existing iron rod, thence continuing with said property N64º35'38"W for a distance of 94.86 feet to an existing iron rod in the eastern public right of way of Roxboro Street, thence along said right of way N26º54'18"E for a distance of 99.65 feet to an existing iron rod, thence continuing with said right of way N26º35'12"E for a distance of 39.07 feet to an existing iron pipe, thence continuing with said right of way N29º23'01"E for a distance of 96.73 feet to an existing PK nail, thence continuing with said right of way N28º09'00"E for a distance of 207.93 feet to an iron pipe set, thence running N81º39'58"E for a distance of 14.62 feet to an existing PK nail, the place and point of BEGINNING for the 'Main Parcel' and containing117,484 square feet or 2.697 acres, more or less, and being all of the Main parcel of West Property, as appears on map captioned "As- Built Survey of West Property, Pettigrew Street Partners, L.L.C."

BEGINNING at an iron pipe in the western right of way of Pettigrew Street (100' public r/w) and the northeastern corner of the 'Main Parcel' of West Property, thence running with the right of way of Pettigrew Street along the arc of a circular curve with a radius of 2125.00 feet, a delta angle of 03º09'36" for an arc length of 117.20 feet, subtended by a chord that bears S30º59'49"E to an existing iron pipe, thence running along the Hendrick Automotive Group property S52º56'13"W for a distance of 128.22 feet to an iron pipe set, thence running along the western 30 foot Hendrick Automotive Group Ingress/Egress Easement N45º46'23"W for a distance of 30.37 feet to an existing iron pipe, thence running along the property line of the 'Main Parcel' of West Property N41º34'48"W for a distance of 79.86 feet to an existing iron pipe, thence continuing with said property line N50º19'45"E for a distance of 151.69 feet to an existing iron pipe, the place and point of BEGINNING for the 'Hatched Parcel' and containing 15,963 square feet or 0.366 acres, more or less, and being all of tract 2 West Property, as appears on map captioned "As- Built Survey of West Property, Pettigrew Street Partners, L.L.C."

EXHIBIT B
FLOOR PLAN

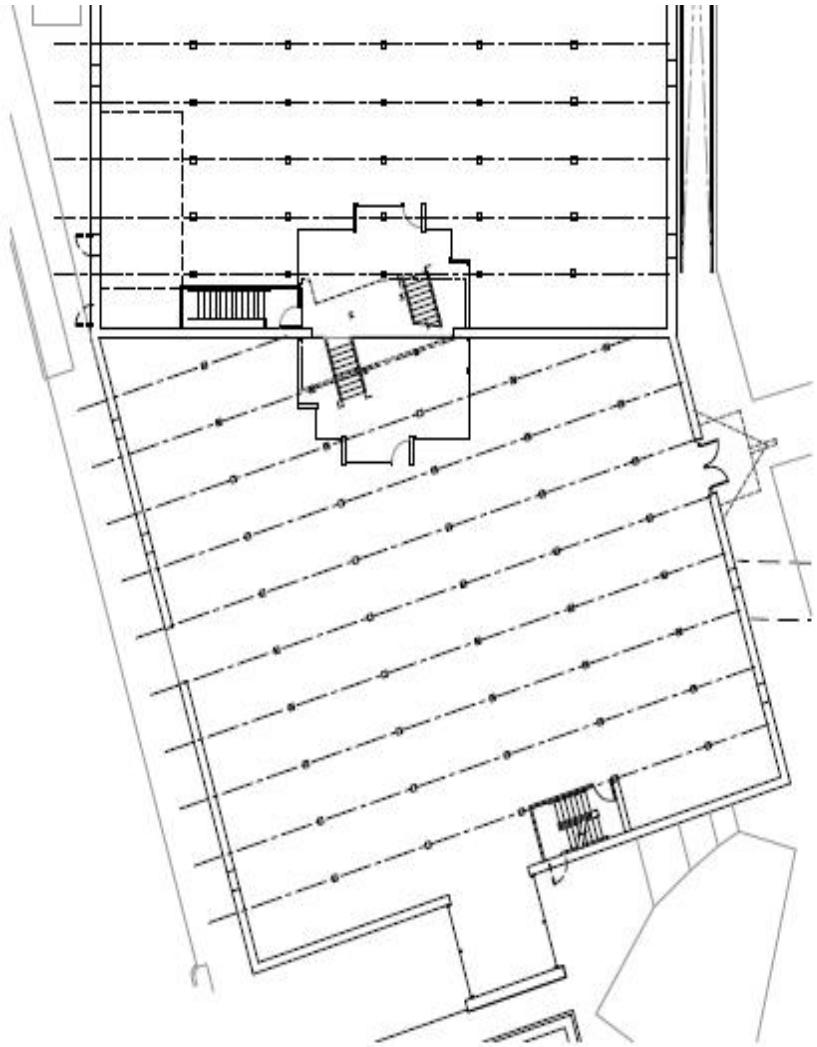


EXHIBIT C
PREMISES SPECIFICATIONS

FLOORS

Existing flooring consists of pine planking and or ¾" sub-flooring installed to provide accessibility for plumbing and electrical rough-ins. Additional sub-flooring required to accommodate Tenant Improvements shall be funded from the Tenant Improvement Allowance.

Any demolition of existing flooring required to accommodate Tenant Improvements shall be funded from the Tenant Improvement Allowance.

WALLS, DOORS & WINDOWS

Common area walls shall consist of hollow metal frames, single pane glazing, and gypsum assemblies (painted or wall covering) typical throughout the Venable campus.

All masonry construction/repair is per approved sand blasted and clear finish sealer method. Repairs or replacement of brick as required will be made using existing salvaged brick or new brick to match existing. New mortar is to match existing.

Interior corridor doors opening onto Common Areas will be stained birch veneer doors per the Venable Campus Standard. Landlord reserves the right to substitute alternate commercial grade materials. All door locksets will be coded and/or keyed in accordance with the building requirements. Codes and/or keys are to be delivered to tenant properly tested and/or tagged.

Exterior perimeter windows will be ½" insulated clear glass in black hollow metal and steel frames.

Landlord shall provide for demolition of any existing interior walls.

CEILING

The ceiling is the existing, historic, natural heart pine. Any exposed ceilings will be sealed by Landlord in accordance with best practices.

PLUMBING

All piping and fixtures within the Tenant Improvements shall be funded from the Tenant Improvement Allowance. The Landlord shall provide water and standard DWV to and from the space. Any additional piping (specialty water or waste) shall be installed from the Tenant Improvement space to the closest source/sewer, and this piping would be funding from the Tenant Improvement Allowance.

HVAC

Premises will be conditioned to office load standards by a rooftop Trane (or equivalent) zoned systems thru rated vertical chases (to lower floors only). All rooftop units to include minimum fresh air settings for anticipated office load occupancy levels. HVAC controls to be located in tenant space with single zone distribution. Additional cooling or ventilation requirements will be funded from the Tenant Improvement Allowance. HVAC distribution within the tenant space and additional control zones shall be funded from the Tenant Improvement Allowance.

ELECTRICAL CAPACITY

Building load is calculated on approximately 2 watts per square foot for the base building and approximately 2 watts per square foot for usable tenant space per typical office demand. Electrical service and meter shall be provided to a subpanel within the tenant space. The subpanel, circuit distribution (conductors and raceways), and fixtures shall be funded from the Tenant Improvement Allowance. Voice and Data Conduits will be provided within interior walls and will be funded from the Tenant Improvement Allowance. The Tenant shall contract directly with a voice/data contractor who will provide and pull cables to the Building Telecommunications Room. The Tenant's voice/data contractor will provide and terminate devices and related equipment. The voice/data contractor and any security work shall not be funded from the Tenant Improvement Allowance.

FIRE

Wet pipe sprinkler system based on ordinary hazard NFPA 13 design with upright heads.
Adjustment of sprinkler heads specific to Tenant Improvements shall be funded from the Tenant Improvement Allowance.

A building standard fire alarm and security system shall be installed and funded from the Tenant Improvement Allowance.

[END OF EXHIBIT C]

EXHIBIT D

WORK LETTER

This Exhibit D sets forth the rights and obligations of Landlord and Tenant with respect to the construction of the improvements to the Premises as described on the Plans ("Tenant Improvements"). This Exhibit contemplates that the following work will be performed, as further described herein, all subject to the prior review and approval by Landlord: (i) preparation of a space plan by the Architect; (ii) final design and engineering and preparation of plans, specifications, and working drawings by the Architect (collectively, the "Plans"); (iii) preparation by the general contractor of Landlord (the "General Contractor") of an estimate of the cost of the Tenant Improvements; (iv) submission to, and approval of Plans by, appropriate governmental authorities; and (v) construction and installation of the Tenant Improvements by the Landlord pursuant to the Plans on or prior to the Commencement Date, subject to Force Majeure and any Tenant Delay.

1. Allowance/Payment of Construction Costs.

(a) Landlord shall construct the Tenant Improvements in accordance with a milestone schedule (the "Schedule"), a copy of which shall be provided to Tenant for Tenant's reasonable approval prior to commencement of construction of the Tenant Improvements. Landlord and Tenant shall prepare and mutually and reasonably approve a budget (the "Budget") for the costs to construct the Tenant Improvements (the "Construction Costs") which shall be attached hereto as Exhibit D-3. The Budget does not include any amounts for furniture, fixtures (other than lighting), equipment, voice/data systems, or personal property of Tenant, which items will be paid for by Tenant separately at its expense. The Budget includes a Construction Contingency which shall be 5% of the Construction Costs. Any unspent Construction Contingency will accrue to the Tenant. Change Orders (as hereinafter defined) shall be funded from increases in the Contract (as hereinafter defined). Landlord agrees to fund a portion of the Construction Costs through the provision of the Tenant Improvement Allowance. The Tenant Improvement Allowance shall be used for items specifically outlined in the Budget and mutually agreed upon by both Landlord and Tenant. The Tenant Improvement Allowance shall be used only for construction, design, and management costs related to fixed improvements to the Building that are part of the Tenant Improvements. The Tenant Improvement Allowance may not be used to offset any Rent payments owed to Landlord by Tenant. Any costs incurred due to a Tenant Delay shall be charged against the Tenant Improvement Allowance; provided, however, Tenant shall be given two (2) days' notice and opportunity to cure any Tenant Delay (including payment by Tenant of any costs associated with such cure such as higher shipping charges) before any costs are charged against the Tenant Improvement Allowance. Landlord and Tenant acknowledge and agree that the Construction Costs will be in excess of the Tenant Improvement Allowance, and all costs for the Tenant Improvements in excess of the Tenant Improvement Allowance shall be borne by Tenant. Therefore, Tenant has agreed to place into an escrow account maintained with Landlord (the "Escrow Account") an amount equal to the Construction Costs as specified in the Budget minus

the Tenant Improvement Allowance (the "Tenant Improvement Overage"). Landlord shall establish the Escrow Account as a separate, interest bearing account in an FDIC insured institution. set forth below, Landlord shall have the authority to make periodic deductions from the Escrow Account as payment for the Construction Costs and the Escrow Account shall be funded in full by Tenant prior to Landlord's issuance of a Notice to Proceed to the General Contractor. Failure by Tenant to deposit the Tenant Improvement Overage into the Escrow Account within five (5) business days after a request from Landlord hereunder shall be a Tenant Delay and a default in payment hereunder. Tenant shall receive all interest that accrues under the Escrow Account.

(b) The Tenant Improvement Allowance and Tenant Improvement Overage shall be disbursed by Landlord upon satisfaction of the following conditions precedent: (i) Landlord shall have received applications for payment certified by the Architect, accompanied by evidence of the portion of the Tenant Improvements that have been completed per the Plans, invoices and paid receipts for all such work completed, and copies of executed lien waivers from those persons providing such work; and (ii) all information and documentation provided to Landlord must be in form and substance reasonably approved by Landlord. Upon Tenant's request, Landlord shall provide Tenant an opportunity to review such information and documentation.

(c) Provided the aforesaid conditions are met, Landlord shall pay the Construction Costs at monthly intervals based upon design and construction billing cycles. Each monthly payment of the Construction Costs shall be paid as follows: fifty percent (50%) of such payment shall be paid from the Tenant Improvement Allowance and the remaining fifty percent (50%) of such payment shall be paid from the Tenant Improvement Overage through the Escrow Account. Within thirty (30) days after the Commencement Date, Landlord shall prepare and submit to Tenant a final statement that illustrates the total cost to construct the Tenant Improvements and the amount paid from and remaining with respect to each of the Tenant Improvement Overage as held in the Escrow Account, and the Tenant Improvement Allowance. If such statement indicates that Landlord has paid less than the total amount of the Tenant Improvement Allowance, then Landlord shall pay Tenant an amount equal to the Tenant Improvement Allowance minus the total amount previously paid by Landlord within ten (10) days of the date of such statement. If such statement reflects that the amount deposited into Escrow Account by Tenant as the Tenant Improvement Overage was greater than the amount required to be paid by Tenant, then Tenant shall be entitled to a prompt refund of any such amounts.

(d) Unless otherwise specified in the Plans, materials used for the Tenant Improvements at the Building shall be good quality, new, and customary for the type of upfit contemplated in this Lease and in facilities comparable to the Building and readily available in the market where the Building is located, all as reasonably determined by Landlord.

(e) During construction of the Tenant Improvements, Landlord shall provide weekly written progress reports to Tenant necessary for Tenant to review work schedules, costs, expenses and construction issues regarding the construction of the Tenant Improvements. The parties will hold periodic meetings, at mutually agreed upon times and locations, to discuss the progress of the construction of the Tenant Improvements. The General Contractor will provide an updated Budget, Schedule, and RFI log every two weeks during construction of the Tenant Improvements. The General Contractor and Landlord reserve the right to cure self imposed delays in the Schedule.

(f) Should a default or event of default occur by Tenant hereunder prior to the Commencement Date, Landlord shall have the right to cease all construction of the Tenant Improvements, and pursue all of its rights and remedies hereunder, or available at law or in equity for any such default or event of default.

2. Space Planning, Design and Working Drawings. Tenant shall engage Integrated Design (the "Architect") to prepare the Plans. After execution of this Lease, Tenant may seek reimbursement from the Tenant Improvement Allowance for fees paid to the Architect. The Architect's fees shall be paid from the Tenant Improvement Allowance by Landlord upon receipt and approval by Landlord of invoices and lien waivers for work performed. Belk Architecture or another architect with historic tax credit expertise (the "Landlord's Architect") shall review the Plans to insure compliance with the requirements of State and Federal law for historic tax credits and all the costs for such review shall be borne by Landlord. If the Landlord's Architect identifies any changes that must be made to the Plans solely for the purposes of complying with requirements for historic tax credits, the costs of designing and constructing such changes shall be borne by Landlord provided there has been no material deviation from the Plans attached as Exhibit D-1. Tenant shall review and respond to any request for approval of the draft plans or final Plans (by U.S. Mail, facsimile, or email) within five (5) business days after a request from either the Architect or Landlord. Any modifications of the Plans sought by Tenant shall be reviewed and subject to the approval of Landlord prior to the modification of the Plans. All communication by Tenant to Landlord with respect to the Tenant Improvements shall be in writing. Tenant shall designate an Authorized Representative to work with Landlord with respect to the Tenant Improvements, and Landlord shall not be obligated to respond to any instructions, approvals, changes, or other communications from anyone claiming to act on Tenant's behalf other than Tenant's Authorized Representative. Review and approval by Landlord of the Plans shall not be construed as any statement by Landlord as to the compliance of the Plans with Applicable Laws.

3. Construction of Tenant Improvements. Landlord shall obtain all state and local licenses, permits and approvals (whether governmental or non-governmental) required to construct the Tenant Improvements and for Tenant's occupancy of the Premises. Landlord shall provide access to the General Contractor for Construction of the Tenant Improvements and to the extent such access requires entry through space occupied by other tenants, Landlord shall provide for such access at its sole cost and expense. The Landlord shall engage, subject to Tenant's reasonable approval, a general contractor to construct the Tenant Improvements (the "General Contractor"). The General Contractor shall construct and install the Tenant Improvements in accordance with the Plans which expense shall be deducted from the Tenant Improvement Allowance. The Tenant Improvements shall be delivered via Associated General Contractors (AGC) Guaranteed Maximum Price Contract (the "Contract") with Liquidated Damages of $500.00 per day for each day of delay in achieving in substantial completion beyond the date specified in the Contract, which date shall be no later than October 1, 2010, and a payment and performance bond. Any Liquidated Damages (less cost of collection) paid to Landlord shall accrue to the Tenant; provided, however, any paid Liquidated Damages for any Tenant Delay shall accrue to Landlord. The General Contractor shall obtain at least three (3) bids for all major trade work at the Premises. Landlord will work with the General Contractor to complete the Tenant Improvements by the Commencement Date. All contracts with vendors and subcontractors for construction of the Tenant Improvements will be negotiated by the General Contractor. All work performed in

connection with the construction of the Premises shall be performed in a good and workmanlike manner, in accordance with all Applicable Laws and the final approved Plans. If materials are not readily available, require quick ship charges, or require substitution, the Tenant will be given notice and the opportunity to select alternate materials. Landlord shall insure that the Architect conducts a periodic review (a minimum of once every two weeks) of the progress of construction to ensure compliance with the Plans. Tenant may from time to time request in writing changes to the Plans (a "Change Order"), subject to Landlord's consent, which shall not be unreasonably withheld. Landlord shall cause Contractor to provide an estimate of any change in the Construction Cost and/or Schedule. Tenant shall have the right to elect whether or not to proceed with the Change Order within five (5) business days after receipt of such estimate. Upon such approval by Tenant, or confirmation by Landlord that the Change Order will not result in any change in cost and/or Schedule, Landlord shall implement the Change Order as part of the Tenant Improvements.

Tenant acknowledges that the following items may result in changes to the Budget and/or Schedule:

(i) Municipal or other governmental inspectors require changes to the Premises such as code compliance changes. In such event, Landlord will notify Tenant of the required changes, but the increased cost of such changes, if any, and any delay associated with such changes shall be the responsibility of Tenant.

(ii) Change Orders approved by Tenant. Any increased costs and delays due to such approved Change Orders shall be the responsibility of Tenant. Any delays caused by such approved Change Orders shall not delay the Commencement Date of the Lease. Landlord shall not charge Tenant any administrative fees in respect of any Change Orders. Tenant shall have five (5) business days to review and approve all Change Orders and any additional review time by Tenant shall be a Tenant Delay.

(iii) If materials are not readily available, require quick ship charges, or require substitution, provided Landlord shall identify any such materials within ten (10) days of final approval of the Plans, and in any such case, Tenant will be given notice and the opportunity to select alternate materials.

(iv) Any Tenant Delay.

4. Repairs and Corrections. Landlord shall require of the General Contractor and any subcontractor constructing the Tenant Improvements no less than a one year express repair and/or replacement warranty covering such work. All manufacturers' and builders' warranties with respect to the Tenant Improvements shall be assigned to Tenant to the extent possible and necessary to assist Tenant in effecting any of Tenant's repair obligations under the Lease without recourse to Landlord. Landlord agrees to enforce for the benefit of Tenant any warranties or guarantees issued in connection with construction of the Tenant Improvements. Tenant shall repair or correct any defective work or materials installed by Tenant or any contractor other than the General Contractor (except subcontractors engaged by the General Contractor), or any work or materials that prove defective as a result of any act or omission of Tenant or any Tenant Party, provided that selection of materials by Tenant is not such an act or omission, and provided further

that work and materials done or installed by the General Contractor or its vendors and subcontractors is not such an act or omission. For purposes of this Section, Landlord will not be considered to be Tenant's agent, invitee, licensee, subtenant, customer, client, or guest.

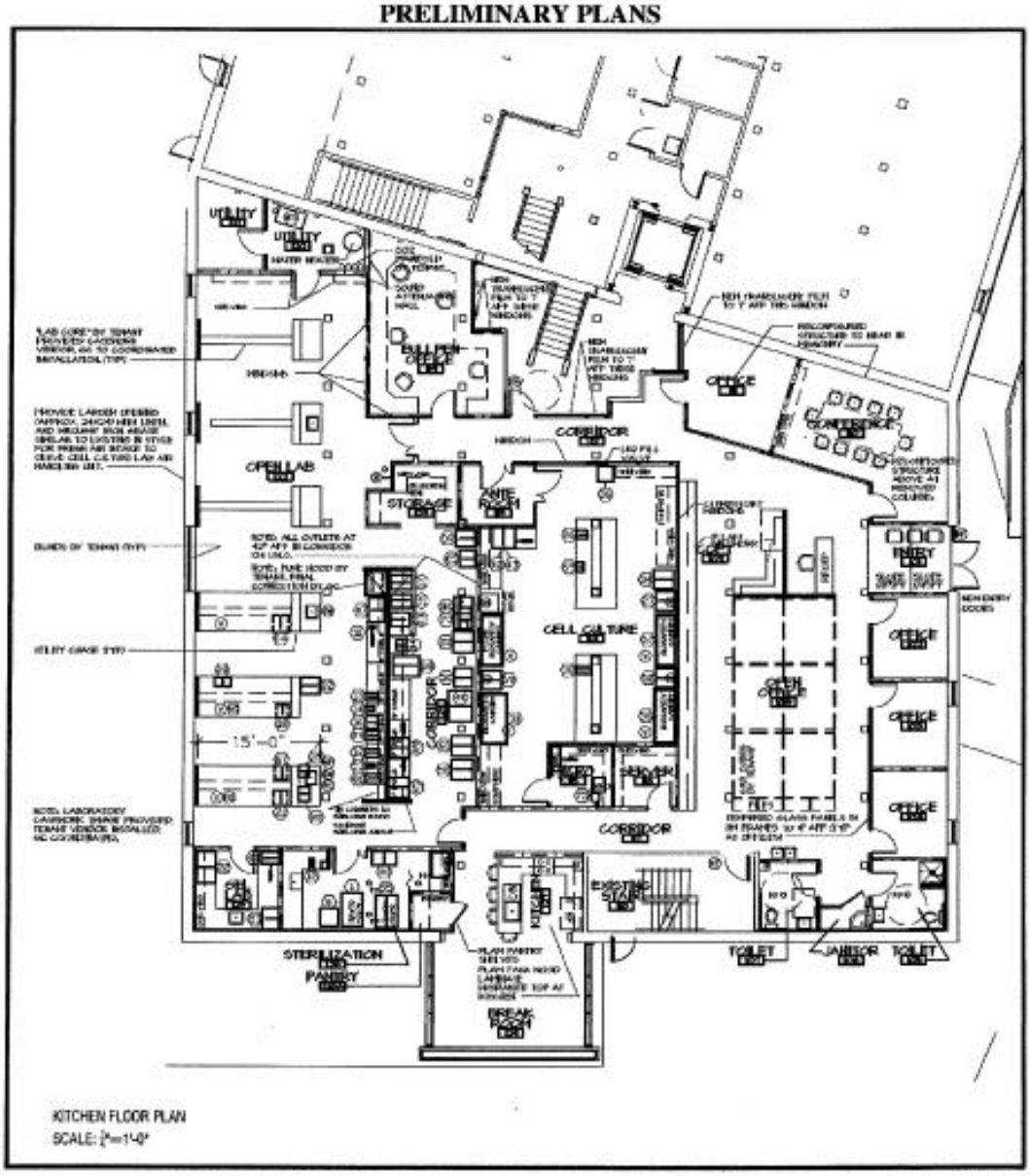
5. Punchlist. Landlord shall provide Tenant with written notice when Landlord believes that substantial completion of the Tenant Improvements has been achieved. Promptly following delivery of such notice, Tenant's Representative and Landlord's Representative shall jointly inspect the Tenant Improvements, and, Landlord and Tenant shall mutually and reasonably prepare a punchlist of items remaining with respect to the Tenant Improvements that require repair or completion (the "Punchlist"). Pursuant to its Contract with Landlord, General Contractor shall make all repairs and completions noted on the Punchlist with respect to the Tenant Improvements within forty-five (45) days (extended for Force Majeure and any Tenant Delay) after receipt of the Punchlist, with any Liquidated Damages paid by the General Contractor for a delay in completion of the Punchlist accruing to the benefit of Tenant. Landlord acknowledges and represents that the Contract will include liquidated damages for delays in final completion (including completion of Punchlist items) in the amount of at least $150.00 per calendar day of delay in completing the Punchlist repairs beyond the time provided in this paragraph.

6. Move-In by Tenant. Tenant shall schedule its move into the Premises with Landlord prior to occupying any portion of the Premises.

7. Tenant Representative. Whenever Landlord or any contractor responsible for the Tenant Improvements shall need to communicate with Tenant about the Tenant Improvement related matters, including Change Orders, Landlord or such contractor shall contact Todd Melby at todd.melby@precisionbiosciences.com or (330) 329-4015.

8. Landlord Representative. Whenever Tenant or any contractor responsible for the Tenant Improvements shall need to communicate with Landlord about the Tenant Improvement related matters, including Change Orders, Tenant or such contractor shall contact Steven Hess at steven.hess@scientificproperties.com, or (919) 600-3435.

EXHIBIT D-1
PRELIMINARY PLANS



Integrated Design
1111 Oberlin Road
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www.id-aep.com
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JOB CODE: VENPB
DATE: 26MAR2010
DRAWING NUMBER
CC-10

INTERIOR COMPLETION FOR:
PRECISION BIOSCIENCES
THE VENABLE CENTER - DIBRELL BUILDING
302 E. PETTIGREW STREET, SUITE 100A, DURHAM, NC
VENABLE CENTER'S HISTORIC WAREHOUSE BUILDING, SOUTH BAY

EXHIBIT D-2

FINAL PLANS

[TO BE ATTACHED UPON THE MUTUAL AND REASONABLE APPROVAL OF LANDLORD AND TENANT]

EXHIBIT E

RULES AND REGULATIONS

1. Building holidays are New Year's Day, Martin Luther King, Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

2. The sidewalks, common areas, and public portions of the Building and Project, such as entrances, passages, courts, elevators, vestibules, stairways, corridors or halls, and the streets, alleys or ways surrounding or in the vicinity of the Building or Project will not be obstructed by Tenant, even temporarily, or encumbered by Tenant or used for any purpose other than ingress to and egress from the Premises.

3. No awnings or other projections will be attached to the outside walls of the Building.

4. No sign, advertisement, notice or other lettering will be exhibited, inscribed, painted or affixed by Tenant on any part of the outside of the Premises or Building unless approved by Landlord (in accordance with the Lease). Signs on entrance doors will, at Tenant's expense, be inscribed, painted or affixed for each tenant by sign makers reasonably approved by Landlord. In the event of the violation of the foregoing by Tenant, Landlord may remove same without notice to Tenant or any liability therefore, and may charge the expense incurred by such removal to Tenant.

5. The sashes, sash doors, skylights, windows, heating, ventilating and air conditioning vents and doors that reflect or admit light and air into the halls, passageways or other public places in the Building will not be covered or obstructed by Tenant.

6. No show cases or other articles will be put in front of or affixed to any part of the exterior of the Building, nor placed in the public halls, corridors, or vestibules without the prior written consent of Landlord.

7. The bathrooms and plumbing fixtures will not be used for any purposes other than those for which they were designed, and no sweepings, rubbish, rags, or other substances will be thrown therein. All damages resulting from any misuse of the bathrooms or fixtures will be the responsibility of Tenant.

8. Tenant will not in any way deface any part of the Premises or the Building.

9. No vehicles or animals of any kind, except leashed animals, and animals assisting disabled persons or used for laboratory purposes, will be brought into or kept in or about the Premises or in the Building except that vehicles may be parked and stored in designated areas; provided, however, only animals assisting disabled persons shall be allowed in areas of the Building other than the Premises, Landlord shall have no liability to Tenant or any Tenant Party with respect to the presence of animals at the Project as permitted by Tenant or any Tenant Party, and Tenant shall indemnify, defend and hold harmless Landlord of, from and against all loss, liability cost, or expense incurred by Landlord or any Landlord Party due to the presence of animals at the Project as permitted by Tenant or a Tenant Party. No cooking will be done or permitted by Tenant on the Premises except in conformity with all Applicable Laws and then

only in the area designated as a kitchen, if any, on the Premises of Tenant which is to be primarily used by Tenant's employees for preparing their food and beverages while within the Premises. Tenant will not cause or permit any unusual or objectionable odors to be produced upon or permeate from the Premises.

10. All desks will be serviced by chairs with rollers that are equipped with floor mats underneath each chair in carpeted areas.

11. No space in the Building will be used for the sale of merchandise, goods, or property of any kind at auction except in the ordinary course of business of Tenant.

12. Tenant will not make, or permit to be made, any unseemly or disturbing noises or unreasonably disturb or interfere with occupants of the Building or neighboring buildings or premises or those having business with them, whether by the use of any musical instrument, radio, talking machine, unmusical noise, whistling, singing, or in any other way. Tenant will not throw anything out of the doors, windows or skylights or down the passageways.

13. Except in accordance with the Lease, neither Tenant, nor any Tenant Party will at any time bring or keep upon the Premises any inflammable, combustible or explosive fluid, or chemical substance, other than reasonable amounts of cleaning fluids or solvents required in the normal operation of Tenant’s business offices and reasonable amounts of butane or similar “cigarette” lighters.

14. No additional locks or bolts of any kind will be placed upon any of the doors, walls, access-ways, or windows by Tenant, nor will any changes be made in existing locks or the mechanism thereof, without the prior written approval of Landlord and unless and until a duplicate key or access card, as applicable, is delivered to Landlord. Tenant will, upon the termination of its tenancy (i) return to Landlord all keys for the Premises and for any area of the Building, or common areas, either furnished to, or otherwise procured by Tenant, (ii) restore the locks, walls, access-ways, windows, and doors to their original condition on the date of this Lease by removing any security measures installed by Tenant, repairing any damage to the Premises or to the Building as a result of the restoration and removal, and (iii) in the event of the loss of any keys furnished to Tenant by Landlord, Tenant will pay to Landlord the cost thereof.

15. Tenant will not overload any floor.

16. Tenant will not occupy or permit any portion of the Premises to be used for the possession, storage, manufacture or sale of liquor, narcotics, or tobacco in any form.

17. Tenant will be responsible for all persons for whom it issues passes and/or keys and will be liable to Landlord for all acts of such persons.

18. The Premises will not be used for lodging or sleeping.

19. The requirements of Tenant will be attended to only by Landlord or the property manager of the Premises.

20. Canvassing, soliciting, and peddling in the Building are prohibited and Tenant will cooperate to prevent the same.

21. All paneling, and other wood products not considered furniture will be of fire retardant materials.

22. No smoking is permitted in the Premises, in the Building, on the Project or on the Land.

23. No weapons concealed or visible are permitted in the Premises, in the Building, or on the Land.

24. In the event the Premises constitute an outdoor patio, exterior generator area, or any open area adjacent to the Premises or on the Land designated under the Lease for the exclusive use of Tenant, Tenant will use furniture and other equipment in any such areas in form, coloring, substance, design and quality subject to the prior approval of Landlord (not to be unreasonably withheld, or delayed). In addition, any outdoor patio, exterior generator area, or other open area must be screened on all sides using materials in form, substance, coloring, design, and quality are subject to the prior approval of Landlord (not to be unreasonably withheld, or delayed), and must be designed and constructed in accordance with plans and specifications that are subject to the prior approval of Landlord (not to be unreasonably withheld, or delayed).

Whenever the above rules conflict with any of the rights or obligations of Tenant pursuant to the provisions of the Lease, the provisions of the Lease will govern. Landlord will not be responsible to Tenant or liable for the non-observance or violation of any of these Rules and Regulations by any other tenant.

EXHIBIT F

TENANT SECURITY PROCEDURES

Precision BioSciences Security Protocol:

Guests:

Invited guests are welcome at Precision BioSciences. All guests must sign into the guest log at the front desk when entering the premises. They will receive a visitor pass from the Executive Assistant which is to be displayed at all times while in the premises.
During their visit, guests must be escorted at all times. While in lab areas, all guests must wear lab coats and safety glasses. Photographs or videos are not allowed unless permission has been granted by an employee. Cell phone use is to be restricted to areas outside of the laboratories and preferably in an office or the conference room.
Upon exit, guests must sign out and return the visitor pass.

EXHIBIT G

LIST OF HAZARDOUS MATERIALS

Exhibit G

Number	Item	Amount	Section	Class	Location
1	Ethanol	5gal	Flammable Liquid	Class IB	Open Lab
2	Isopropanol		Flammable Liquid	Class IB	Open Lab
3	2-Mercaptoethanol	100ml	Combustible Highly Toxic	Class IIIA	Open Lab
4	Acetic Acid	2L	Combustible Corrosive	Class II	Open Lab
5	Adenine	20g	Toxic		Open Lab
6	Buffer N3	4gal?	Combustible	Class II	Open Lab
7	Buffer PB	4gal?	Combustible	Class II	Open Lab
8	Buffer PM	2gal?	Combustible	Class II	Open Lab
9	Buffer QBT	0.5gal?	Combustible	Class II	Open Lab
10	Buffer QC	0.5gal?	Combustible	Class II	Open Lab
11	Buffer QF	0.5gal?	Combustible	Class II	Open Lab
12	Butane		Flammable Gas Aerosol		Open Lab
13	Coomassie Stain	1L	Flammable Liquid	Class IB	Open Lab
14	Dimethyl Sulfoxide	200ml	Combustible	Class IIIB	Open Lab
15	Formaldehyde	500mL	Combustible Toxic	Class IIIA	Open Lab
16	Hydrochloric Acid	2L	Corrosive		
17	Imidazole	25g	Toxic Corrosive		
18	Methanol	4L	Flammable Liquid	Class IB	Open Lab
19	Phenol	250ml	Combustible Toxic	Class IIA	Open Lab
20	Phenol-Chloroform	50ml	Combustible Toxic	Class IIA	Open Lab
21	Protein G – Sepharose	5mL	Combustible	Class II	Open Lab
22	Sodium Acetate (3M)	100mL	Combustible	Class IIIB	Open Lab
23	Sodium Dodecyl Sulfate	30g	Flammable Solid Toxic		Open Lab
24	Sodium Hydroxide	650g/10ml	Corrosive		Open Lab
25	Triton X-100	500ml	Combustible	Class IIIB	Open Lab
26	Xylene Cyanide	5g	Combustible	Class IIIB	Open Lab

FIRST AMENDMENT TO THE LEASE AGREEMENT

THIS FIRST AMENDMENT TO LEASE AGREEMENT (the "Amendment") is made and entered into as of the 19th day of August, 2011 by and between VENABLE TENANT, LLC, a North Carolina limited liability company (the "Landlord"), and PRECISION BIOSCIENCES, INC., a Delaware Corporation (the "Tenant").

WITNESSETH:

WHEREAS, pursuant to that certain Lease Agreement dated April 5, 2010 by and between Landlord and Tenant (the "Lease"), Tenant leased certain premises located in the Dibrell A Warehouse Building at 302 East Pettigrew Street, Durham, North Carolina (the "Building") and consisting of approximately 8,274 rentable square feet, as more particularly described in the Lease (the "Premises"); and

WHEREAS, the parties desire to modify the Lease as provided herein.

NOW, THEREFORE, in consideration of cash in hand paid and the promises and the provisions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant hereby agree to amend and modify the Lease as follows:

1. Roof Access.

(a) Tenant has requested and Landlord has agreed that Tenant, its agents, employees, and independent contractors (all of the foregoing, together with Tenant shall be referred to herein collectively, as the "Tenant Parties" or each as a "Tenant Party") may have access to the roof of the Building (the "Roof") provided that Tenant complies with the following terms and conditions:

(i) Tenant shall maintain insurance against loss or damage to person (including death) or property due to any act or omission of any Tenant Party in connection with the access of the Roof and conduct of work thereon;

(ii) The sole purpose for access by a Tenant Party to the Roof is the repair, maintenance and replacement of HVAC units, and/or generators owned by Tenant and located on the Roof;

(iii) To the extent caused by a Tenant Party's access to the Roof or conduct of work thereon, Tenant shall promptly repair any damage to the Roof, or any property of Landlord or of any other tenant of the Building located thereon caused by Tenant Party. Landlord reserves the right to make said repairs, at the sole expense of the Tenant, if Tenant repairs do not occur in a timely fashion or in the event other Tenants of the building are negatively impacted as a result of the repair timing and Tenant shall remit payment to the Landlord of its actual and reasonable costs incurred in effecting any such repairs within ten business days after demand made by Landlord and documentation of Landlord's costs provided to Tenant therefore;

(iv) Landlord shall have the right to limit access by Tenant to the Roof in the event of an emergency or other circumstance that requires such limitation;

(v) No act or omission by a Tenant Party shall result in penetration of the membrane of the Roof; and

(vi) Tenant shall comply with all Applicable Laws (as defined in the Lease) in connection with its access to the Roof and conduct of work thereon.

(b) Notwithstanding any provision of this Amendment to the contrary, if any Tenant Party shall fail to comply with the terms and conditions stated herein, Landlord may terminate the right of Tenant to access the Roof upon ten (10) days prior written notice to Tenant specifying the reason for such termination.

(c) Tenant acknowledges on behalf of each Tenant Party that there are no walls, railings, barriers, or other structures on the edges of the Roof (defined as the "Roof Condition"), and understands the potential danger and risk associated with its entry thereon, and Tenant acknowledges that Tenant is not aware of any obligation Landlord has to modify the Roof Condition existing as of this date.

(d) Landlord shall not be liable and Tenant hereby remises, releases and forever discharges Landlord, and its owners, directors, members, shareholders, members, managers, affiliates, partners, officers, insurers, agents (including, but not limited to, the property manager of Landlord, Scientific Properties, LLC), accountants, employees, attorneys, and assigns of and from any and all claims resulting from a Tenant Party's breach of the terms of this Amendment. Tenant shall indemnify, defend and hold Landlord harmless from and against any and all loss, liability, damages (including, but not limited to personal injury, death, or property damage), costs, expenses, and attorneys' fees incurred by Landlord arising from (i) any breach by a Tenant Party of this Amendment; or (ii) any entry by a Tenant Party upon the Roof, unless any such loss, liability, damages (including, but not limited to, personal injury, death or property damage) is due to a breach by Landlord of this Amendment.

2. Acknowledgement. Landlord acknowledges and agrees that nothing in this Amendment shall limit Landlord's obligation to maintain and repair the Roof and the Building pursuant to Sections 7 and 10 of the Lease for any maintenance and/or repairs not resulting from damage by a Tenant Party.

3. Severability. In the event any term, covenant or condition of this Amendment, the Lease, or any amendments thereto shall to any extent be invalid or unenforceable, the remainder shall not be affected thereby and each term, covenant or condition shall be valid and enforceable to the full extent permitted by law.

4. Successors and Assigns. This Amendment shall apply to, inure to the benefit of, and be binding upon the parties hereto and upon their respective heirs, legal representatives, successors and permitted assigns, except as otherwise provided herein.

5. Authority of Parties. Each party hereto hereby certifies that it is authorized to enter into this Amendment, and that those persons signing below on its behalf are authorized to do so.

6. Full Force and Effect. Except as modified hereby, the Lease is hereby reaffirmed, unmodified and in full force and effect.

7. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of North Carolina.

8. Mutual Acknowledgment of Non-Existence of Claims. Except as provided herein, Landlord and Tenant acknowledge and agree that as of the day hereof there are no known claims by either party against the other party hereto arising from the relationship as Landlord and Tenant, respectively, pursuant to the Lease, as amended.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties hereto have hereunto executed this Amendment as of the day and year first above written.

LANDLORD:

VENABLE TENANT, LLC

By: SCIENTIFIC PROPERTIES, LLC

By: /s/ Barbra B. Rothschild
Barbra B. Rothschild, Manager

TENANT:

PRECISION BIOSCIENCES, INC.

By: /s/ Todd Melby
Print Name: Todd Melby
Its: CFO/COO

SECOND AMENDMENT TO THE LEASE AGREEMENT

THIS SECOND AMENDMENT TO THE LEASE AGREEMENT (the "Amendment") is made and entered into as of July 13, 2015 by and between VENABLE TENANT, LLC, a North Carolina limited liability company (the "Landlord"), and PRECISION BIOSCIENCES, INC., a Delaware corporation (the "Tenant").

WITNESSETH:

WHEREAS, pursuant to that certain Lease Agreement dated April 5, 2010, as amended by that certain First Amendment to Lease Agreement dated August 19, 2011, by and between Landlord and Tenant, Tenant leased certain premises known as Suite 100 in the Dibrell A Building at 302 East Pettigrew Street, Durham, NC (the Lease Agreement and all amendments thereto shall be referred to herein collectively as the "Lease"); and

WHEREAS, Tenant has requested and Landlord has agreed to modify the Lease as provided herein.

NOW, THEREFORE, in consideration of cash in hand paid and the promises and the provisions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant hereby agree as follows:

1. Definition of Terms. All capitalized terms contained herein and not otherwise defined shall be defined as provided in the Lease.

2. Term.

(a) The term of the Lease currently expires on February 28, 2016. Landlord has agreed to extend the term of the Lease for a period of sixty-five (65) months (the "Extended Term") for a revised Termination Date of July 31, 2021.

(b) During the Extended Term, the Premises shall be leased by Tenant "as is" except as expressly provided herein, and subject to Landlord’s continuing Lease obligations (such as repair and maintenance).

3. Premises.

(a) Tenant has requested and Landlord has agreed to an expansion of the Premises (collectively, the "Expansion Space") to include the addition of (i) approximately 8,427 rentable square feet on the second floor of the Building known as Suite 200, and (ii) approximately 2,863 rentable square feet known as Suite 30 in the building known as the Receiving Room. A floor plan of the Expansion Space is attached hereto and made a part hereof as Exhibit A.

(b) The term of the Lease for the Expansion Space shall commence upon the date that the Expansion Space is substantially complete (as evidenced by a certificate of occupancy issued by the City of Durham and certification of substantial completion by the Architect), which it is estimated shall occur on September 1, 2015 (the "Expansion Commencement Date"), and shall terminate on the revised Termination Date. On the Expansion Commencement Date, the term

"Premises" under the Lease shall include the Expansion Premises, and the term "Building" shall be deemed to include the Receiving Room Building. Notwithstanding the foregoing, upon Tenant's request and within a reasonable timeframe thereafter, Landlord shall advise Tenant if a portion of the Expansion Space (the "Early Portion") may be occupied by Tenant before the entirety of the Expansion Space is completed and Tenant shall advise Landlord if it desires to occupy the Early Portion. Early occupancy of the Early Portion shall not trigger the Expansion Commencement Date or the Expansion Rent Abatement (as defined herein) and for such occupancy, Tenant shall pay an equitable portion of the Base Rent based upon the then current rate for the Premises, and any other charges for the Early Portion (including increased charges for Operating Expenses based upon the increased Tenant's Proportionate Share), with Landlord and Tenant negotiating reasonably and in good faith to determine such charges based on the square footage of the Early Portion and the number of days Tenant occupies the Early Portion for the conduct of its business prior to the actual Expansion Commencement Date at which time, Tenant shall pay the Base Rent set forth in the Landlord's Notice (as defined herein).

(c) Effective upon the Expansion Commencement Date, Tenant's Proportionate Share of the Dibrell A Warehouse Building shall be 32.32431 percent, Tenant's Proportionate Share of the Receiving Room / Prizery Building shall be 8.41119 percent, and Tenant's Proportionate Share of the Project shall be 22.82741 percent.

4. Upfit of Expansion Space. Landlord shall provide an allowance to Tenant for its use in the upfit of the Expansion Space in an amount of up to $250,000 (the "Upfit Allowance"). The Upfit Allowance may be used by Tenant for permitting, construction, architectural and engineering costs, including, costs for cable and information technology. The manner in which Upfit Allowance is to be provided and details of construction of the upfit for the Expansion Space shall proceed per the terms of the Work Letter attached hereto and made a part hereof as Exhibit B.

5. Base Rent.

(a) Commencing upon the Expansion Commencement Date, Base Rent shall be due and payable for the portion of the Premises located in the (i) Dibrell Building of approximately 16,539 rentable square feet (Suites A-100 and A-200) at the rate of $18.50 per rentable square feet, triple-net, with a Base Annual Rent Escalation of 2.75 percent each Lease Year, and (ii) Receiving Room Building (Suite RR-30) of approximately 2,863 rentable square feet at the rate of $21.25 per rentable square feet, full service, with a Base Annual Rent Escalation of 2.75 percent each Lease Year.

(b) Provided there is no event of default under the Lease then in effect, commencing with the Expansion Commencement Date, Base Rent under the Lease shall be abated for a period of five months (the "Expansion Rent Abatement").

6. Base Year. The Base Year for the purposes of calculating Additional Rent attributable to increases in Operating Expenses for the Receiving Room, Suite 30 shall be 2016.

7. Operating Expenses. During the Extended Term, Tenant shall continue to pay Tenant's Proportionate Share of Operating Expenses as provided in the Lease, and amended hereby

for the portion of the Expansion Space located in the Dibrell Building. During 2015 and the Base Year of 2016, Tenant will not pay for Operating Expenses attributable to Suite RR-30, as the Base Rent for the Receiving Room space is a full-service rate with a 2016 base stop. In subsequent Lease Years, , Tenant will be charged for increases in Operating Expenses attributable to Suite RR-30 over and above the Base Year 2016.

8. Direct Tenant Expenses. Tenant will arrange for the provision of service and shall pay directly to each service provider all charges as follows:

a. Suites A-100 and A-200: all electricity, gas, and other utilities; janitorial, telephone and internet/data used on or from the Premises together with any taxes, penalties, surcharges, or the like pertaining thereto

b. Suite RR-30: all telephone and internet/data used on or from the Premises together with any taxes, penalties, surcharges, or the like pertaining thereto

9. Security Deposit. Section 9 of the Lease is hereby deleted and the following new Section 9 inserted in lieu thereof:

Promptly upon the full execution of this Amendment (with delivery of a copy thereof to Tenant), Tenant shall deposit the amount required to increase the Security Deposit under the Lease to $123,269.08, four months Base Rent for the Premises on the Expansion Commencement Date. Provided there is no default or event of default by Tenant under the Lease, the Security Deposit shall be reduced to (i) three months Base Rent on the first anniversary of the Expansion Commencement Date, and (ii) one month Base Rent on the second anniversary of the Expansion Commencement Date. Landlord will not be required to apply all or any portion of the Security Deposit with respect to any particular violation or default by Tenant but Landlord may apply all or any portion (as reasonably required to effect a cure) of the Security Deposit to any violation, breach, or default by Tenant hereunder. Landlord will be entitled to hold the Security Deposit in an account maintained by Landlord for such funds from all tenants of Landlord. Any interest paid on such an account will become a part of the Security Deposit, accrue to the benefit of the Tenant (less any customary bank fees or charges for maintaining such account), and be delivered to Tenant upon termination of this Lease provided that the Security Deposit and interest thereon have not been applied by Landlord to an event of default hereunder. Tenant will reimburse Landlord for such portions of the Security Deposit as Landlord will from time to time apply with respect to any violation, breach, or default by Tenant hereunder promptly upon written notice of such application by Landlord. Any portion of the Security Deposit which has not been appropriated by Landlord in accordance with the provisions hereof will be returned to Tenant within thirty (30) days after the termination of this Lease.

If Landlord conveys Landlord's interest under this Lease, the Security Deposit, or any part thereof not previously applied, shall be released by Landlord to Landlord's grantee (to the extent not applied to any default by Tenant hereunder), and if so released, Tenant agrees to look solely to such grantee for the proper application and return thereof in accordance with the Lease provided that Tenant receives written notice of such conveyance. Tenant agrees that Tenant will not assign, and that neither Landlord, nor its successors and assigns, will

be bound by any such assignment, encumbrance or pledge, attempted assignment, attempted pledge, or attempted encumbrance of the Security Deposit.

Any mortgagee or ground lessor will not be responsible to Tenant for the return or application of the Security Deposit, whether or not it succeeds to the position of Landlord hereunder, unless the security deposit will have been received in hand by such mortgagee or ground lessor.

Any unperformed obligations of Landlord or Tenant under this Section will survive the termination of the Lease, for whatever reason, or any extension or renewal hereof.

10. Right of Refusal. Landlord hereby grants to Tenant a one-time right of first refusal to lease space in the Project (the "Refusal Space") under the terms and conditions as provided below:

(i) So long as there is no default (beyond any applicable grace and/or cure period) or event of default by Tenant under the Lease, Landlord will notify Tenant when it has all or a portion of the Refusal Space offered for lease to a third party (the "Third Party") and the terms and conditions upon which Landlord is willing to lease such space ("Landlord's Notice") .

(ii) Tenant shall provide written notice to Landlord, as to Tenant's decision to lease or not to lease the Refusal Space within ten (10) business days after Landlord's Notice is received. If Tenant does provide to Landlord notice to lease the Refusal Space, Landlord and Tenant will negotiate in good faith to agree upon an amendment to the Lease to add the Refusal Space within ten (10) business days after Landlord's receipt of Tenant's notice of intent to lease on all the same terms provided to the Third-Party. If Tenant does not provide written notice to Landlord within ten (10) business days after receipt of the Landlord's Notice, Tenant will have been deemed to have waived its right to lease the Refusal Space and Landlord shall be free to enter into a lease with the Third Party (upon substantially the same terms and conditions listed in Landlord's Notice), and Tenant shall have no further rights with respect to that particular Refusal Space within the Project.

Once Landlord has offered a specific portion of the Refusal Space to Tenant, and Tenant has not leased such specific portion under the terms and conditions provided in this Section, Tenant shall have no further right to such specific portion; provided, however, the balance of the Refusal Space that has not been offered to Tenant under this section remains subject to Tenant's Right of First Refusal provided herein.

The rights provided to Tenant in this Section (i) are subject to the pre-existing rights of other tenants of the Building as described on Exhibit C, attached hereto and made a part hereof, and (ii) shall not inure to the benefit of any subtenant of all or a portion of the Premises.

11. Option to Extend. Tenant shall have the option to extend the term of the Lease for one period of five Lease Years (the "Renewal Term") provided that Tenant shall give written notice to Landlord of its desire to exercise its right to the Renewal Term at least one hundred and eighty days prior to the end of the then current term; failing which the rights of Tenant under this Section shall be null and void and of no further force and effect. During the Renewal Term, the terms of

the Lease shall continue in full force and effect, including, that Base Rent shall continue to increase by the Base Rent Escalation. During the Renewal Term, the Premises shall be leased by Tenant "as is," subject to Landlord's continuing Lease obligations (such as repair and maintenance).

12. Parking. With its lease of the Expansion Space, Tenant shall have the non-exclusive right to the use of up to forty-five (45) parking spaces at the Project.

13. Keys to Premises. Tenant shall be provided one key and/or fob for each of its employees (now or hereafter employed) for use at the Premises. Landlord shall have the right to charge a reasonable fee for replacement of any lost key or fob.

14. Brokerage. Tenant and Landlord each warrants and represents to the other that it has had no dealings with any real estate broker or agent in connection with this Lease other than DTZ, the "Tenant Broker," and Landlord agrees to pay a fee to the Tenant Broker pursuant to separate written agreement. Tenant and Landlord each covenants to pay, hold harmless, and indemnify the other from and against any and all costs, expenses, liabilities (including reasonable attorneys' fees), causes of action, claims or suits in connection with any compensation, commission, fee, or charges claimed by any other real estate broker or agent with respect to this Lease or the negotiation thereof, arising out of any act of said party.

15. Severability. In the event any term, covenant or condition of this Amendment, the Lease, or any amendments thereto shall to any extent be invalid or unenforceable, the remainder shall not be affected thereby and each term, covenant or condition shall be valid and enforceable to the full extent permitted by law.

16. Successors and Assigns. This Amendment shall apply to, inure to the benefit of, and be binding upon the parties hereto and upon their respective heirs, legal representatives, successors and permitted assigns, except as otherwise provided herein.

17. Authority of Parties. Each party hereto hereby certifies that it is authorized to enter into this Amendment, and that those persons signing below on its behalf are authorized to do so.

18. Full Force and Effect. Except as modified hereby, the Lease remains unmodified and in full force and effect.

19. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of North Carolina.

20. Mutual Acknowledgment of Non-Existence of Claims. Except as provided herein, Landlord and Tenant acknowledge and agree that as of the day hereof there are no known claims by either party against the other party hereto arising from the relationship as Landlord and Tenant, respectively, pursuant to the Lease, as amended.

21. Effective Date. The provisions of this Amendment shall be effective as of the day and year first written above.

22. Rights of Tenant. Tenant shall have no options to renew or extend the term of the Lease, rights to expand the Premises or rights of refusal except as expressly provided in this Amendment.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties hereto have hereunto executed this Amendment as of the day and year first above written.

TENANT:

PRECISION BIOSCIENCES, INC.

By: /s/ Matthew Kane
Print Name: Matthew Kane
Title: CEO
Date: June 20, 2015

LANDLORD:

VENABLE TENANT, LLC

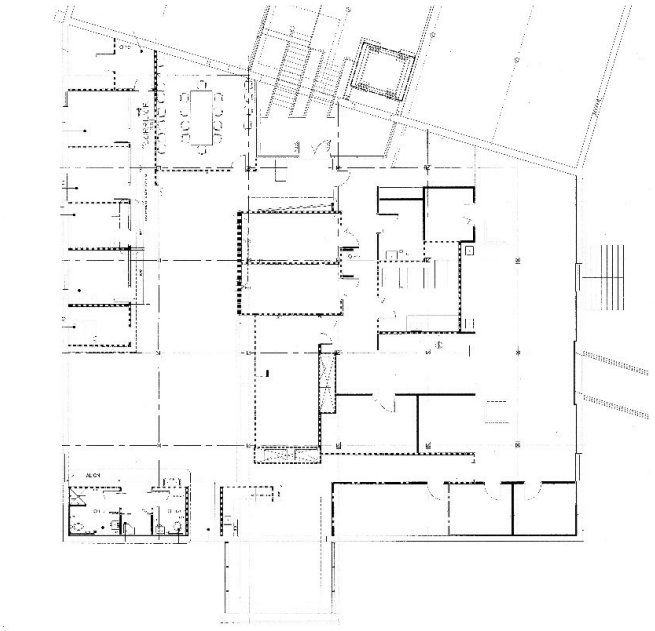
By: SCIENTIFIC PROPERTIES, LLC

By: /s/ Barbra Rothschild
Barbra Rothschild, Manager
Date: 20 June, 2015

EXHIBIT A

FLOOR PLAN

Suite A-200



Receiving Room Suite-30

EXHIBIT B

WORK LETTER

This Exhibit B sets forth the rights and obligations of Landlord and Tenant with respect to the construction of the improvements to the Expansion Space Premises as described on the Plans ("Tenant Improvements"). This Exhibit contemplates that the following work will be performed, as further described herein, all subject to the prior review and approval by Landlord: (i) preparation of a space plan by the Architect; (ii) final design and engineering and preparation of plans, specifications, and working drawings by the Architect (collectively, the "Plans"); (iii) preparation by the general contractor of Landlord (the "General Contractor") of an estimate of the cost of the Tenant Improvements; (iv) submission to, and approval of Plans by, appropriate governmental authorities; and (v) construction and installation of the Tenant Improvements pursuant to the Plans on or prior to the Commencement Date, subject to Force Majeure and any Tenant Delay.

1. Allowance/Payment of Construction Costs.

(a) Landlord and Tenant shall mutually-approve and select a General Contractor to construct the Tenant Improvements in accordance with a milestone schedule (the "Schedule"), a copy of which shall be reasonably approved by Landlord and Tenant prior to commencement of construction of the Tenant Improvements. Landlord acknowledges and agrees that Clancy & Theys is deemed approved as a potential Contractor, should Tenant so choose. Landlord and Tenant shall prepare and mutually and reasonably approve a budget (the "Budget") for the costs to construct the Tenant Improvements (the "Construction Costs"). The Budget will not include any amounts for furniture, fixtures (other than lighting), equipment, or personal property of Tenant, which items will be paid for by Tenant separately at its expense. The Budget shall include a Construction Contingency which shall be 5% of the Construction Costs. Any unspent Construction Contingency will accrue to the Tenant. Change Orders (as hereinafter defined) shall be funded from increases in the Contract (as hereinafter defined). Landlord agrees to fund a portion of the Construction Costs through the provision of the Upfit Allowance of $250,000. The Upfit Allowance shall be used for items specifically outlined in the Budget and mutually agreed upon by both Landlord and Tenant. The Upfit Allowance shall be used only for construction, design, and management costs related to fixed improvements to the Building that are part of the Tenant Improvements. The Upfit Allowance may not be used to offset any Rent payments owed to Landlord by Tenant. Any costs incurred due to a Tenant Delay shall be charged against the Upfit Allowance; provided, however, Tenant shall be given two (2) days' notice and opportunity to cure any Tenant Delay (including payment by Tenant of any costs associated with such cure such as higher shipping charges) before any costs are charged against the Upfit Allowance. Landlord and Tenant acknowledge and agree that the Construction Costs will be in excess of the Upfit Allowance, and all costs for the Tenant Improvements in excess of the Upfit Allowance shall be borne by Tenant. Therefore, Tenant has agreed to place into an escrow account maintained with Landlord (the "Escrow Account") an amount equal to the Construction Costs as specified in the Budget minus the Upfit Allowance (the "Tenant Improvement Overage"). Landlord shall establish the Escrow Account as a separate, interest bearing account in an FDIC insured institution. set forth below, Landlord shall have the authority to make periodic deductions from the Escrow Account as payment for the Construction Costs and the Escrow Account shall be funded in full by Tenant prior to Landlord's issuance of a Notice to Proceed to the General Contractor. Failure by Tenant to deposit the Tenant Improvement Overage into the Escrow Account within five (5) business days

after a request from Landlord hereunder shall be a Tenant Delay and a default in payment hereunder. Tenant shall receive all interest that accrues under the Escrow Account.

(b) The Upfit Allowance and Tenant Improvement Overage shall be disbursed by Landlord upon satisfaction of the following conditions precedent: (i) Landlord shall have received applications for payment certified by the Architect, accompanied by evidence of the portion of the Tenant Improvements that have been completed per the Plans, invoices and paid receipts for all such work completed, and copies of executed lien waivers from those persons providing such work; and (ii) all information and documentation provided to Landlord must be in form and substance reasonably approved by Landlord. Upon Tenant's request, Landlord shall provide Tenant an opportunity to review such information and documentation.

(c) Provided the aforesaid conditions are met, Landlord shall pay the Construction Costs at monthly intervals based upon design and construction billing cycles. Each monthly payment of the Construction Costs shall be paid as follows: fifty percent (50%) of such payment shall be paid from the Upfit Allowance and the remaining fifty percent (50%) of such payment shall be paid from the Tenant Improvement Overage through the Escrow Account. Within thirty (30) days after the Commencement Date, Landlord shall prepare and submit to Tenant a final statement that illustrates the total cost to construct the Tenant Improvements and the amount paid from and remaining with respect to each of the Tenant Improvement Overage as held in the Escrow Account, and the Upfit Allowance. If such statement indicates that Landlord has paid less than the total amount of the Upfit Allowance, then Landlord shall pay Tenant an amount equal to the Upfit Allowance minus the total amount previously paid by Landlord within ten (10) days of the date of such statement. If such statement reflects that the amount deposited into Escrow Account by Tenant as the Tenant Improvement Overage was greater than the amount required to be paid by Tenant, then Tenant shall be entitled to a prompt refund of any such amounts.

(d) Unless otherwise specified in the Plans, materials used for the Tenant Improvements at the Building shall be good quality, new, and customary for the type of upfit contemplated in this Lease and in facilities comparable to the Building and readily available in the market where the Building is located, all as reasonably determined by Landlord.

(e) During construction of the Tenant Improvements, Landlord and Tenant or their agents shall, on a weekly basis review work schedules, costs, expenses and construction issues regarding the construction of the Tenant Improvements. The parties will hold periodic meetings, at mutually agreed upon times and locations, to discuss the progress of the construction of the Tenant Improvements. The General Contractor will provide an updated Budget, Schedule, and RFI log every two weeks during construction of the Tenant Improvements. The General Contractor and Landlord reserve the right to cure self imposed delays in the Schedule.

(f) Should a default or event of default occur by Tenant hereunder prior to the Commencement Date, Landlord shall have the right to cease all construction of the Tenant Improvements, and pursue all of its rights and remedies hereunder, or available at law or in equity for any such default or event of default.

2. Space Planning, Design and Working Drawings. Tenant shall engage Integrated Design (the "Architect") to prepare the Plans. Tenant may include fees previously paid to the Architect in the approved Budget. Any Architect's fees reimbursed to Tenant from the Upfit

Allowance shall be paid from the Upfit Allowance by Landlord upon receipt and approval by Landlord of invoices and lien waivers for work performed. If the Architect used by Tenant is not qualified with respect to compliance of the Plans with historic tax credit laws, statutes and regulations, Belk Architecture or another architect with historic tax credit expertise shall review the Plans to insure compliance with the requirements of State and Federal law for historic tax credits and all the costs for such review shall be borne by Landlord. Tenant shall review and respond to any request for approval of the draft plans or final Plans (by U.S. Mail, facsimile, or email) within five (5) business days after a request from either the Architect or Landlord. Any modifications of the Plans sought by Tenant shall be reviewed and subject to the approval of Landlord prior to the modification of the Plans. All communication by Tenant to Landlord with respect to the Tenant Improvements shall be in writing. Tenant shall designate an Authorized Representative to work with Landlord with respect to the Tenant Improvements, and Landlord shall not be obligated to respond to any instructions, approvals, changes, or other communications from anyone claiming to act on Tenant's behalf other than Tenant's Authorized Representative. Review and approval by Landlord of the Plans shall not be construed as any statement by Landlord as to the compliance of the Plans with Applicable Laws.

3. Construction of Tenant Improvements. Landlord shall, via the General Contractor, obtain all state and local licenses, permits and approvals (whether governmental or non-governmental) required to construct the Tenant Improvements and for Tenant's occupancy of the Expansion Space. Landlord shall provide access to the General Contractor for Construction of the Tenant Improvements and to the extent such access requires entry through space occupied by other tenants, Landlord shall provide for such access at its sole cost and expense. The Landlord shall engage, subject to Tenant's reasonable approval, a general contractor to construct the Tenant Improvements (the "General Contractor"). The General Contractor shall construct and install the Tenant Improvements in accordance with the Plans which expense shall be deducted from the Upfit Allowance. The Tenant Improvements shall be delivered via Associated General Contractors (AGC) Guaranteed Maximum Price Contract (the "Contract") with Liquidated Damages of $500.00 per day, and a payment and performance bond. Any Liquidated Damages (less cost of collection) paid to Landlord shall accrue to the Tenant; provided, however, any paid Liquidated Damages for any Tenant Delay shall accrue to Landlord. The General Contractor shall obtain at least three (3) bids for all major trade work at the Expansion Space. Landlord will work with the General Contractor to complete the Tenant Improvements by the Commencement Date. All contracts with vendors and subcontractors for construction of the Tenant Improvements will be negotiated by the General Contractor. All work performed in connection with the construction of the Expansion Space shall be performed in a good and workmanlike manner, in accordance with all Applicable Laws and the final approved Plans. If materials are not readily available, require quick ship charges, or require substitution, the Tenant will be given notice and the opportunity to select alternate materials. Landlord shall insure that the Architect conducts a periodic review (a minimum of once every two weeks) of the progress of construction to ensure compliance with the Plans. Tenant may from time to time request in writing changes to the Plans (a "Change Order"), subject to Landlord's consent, which shall not be unreasonably withheld. Landlord shall cause Contractor to provide an estimate of any change in the Construction Cost and/or Schedule. Tenant shall have the right to elect whether or not to proceed with the Change Order within five (5) business days after receipt of such estimate. Upon such approval by Tenant, or confirmation by Landlord that the Change Order will not result in any change in cost and/or Schedule, Landlord

shall implement the Change Order as part of the Tenant Improvements. Landlord acknowledges that Tenant may hire the General Contractor and/or any subcontractors to perform other work items (in accordance with the terms and conditions of the Lease) within the original Premises concurrently with the Tenant Improvements, provided such work does not require changes to the Schedule.

Tenant acknowledges that the following items may result in changes to the Budget and/or Schedule:

(i) Municipal or other governmental inspectors require changes to the Expansion Space such as code compliance changes. In such event, Landlord will notify Tenant of the required changes, but the increased cost of such changes, if any, and any delay associated with such changes shall be the responsibility of Tenant.

(ii) Change Orders approved by Tenant. Any increased costs and delays due to such approved Change Orders shall be the responsibility of Tenant. Any delays caused by such approved Change Orders shall not delay the Commencement Date of the Lease. Landlord shall not charge Tenant any administrative fees in respect of any Change Orders. Tenant shall have five (5) business days to review and approve all Change Orders and any additional review time by Tenant shall be a Tenant Delay.

(iii) If materials are not readily available, require quick ship charges, or require substitution, provided Landlord shall identify any such materials within ten (10) days of final approval of the Plans, and in any such case, Tenant will be given notice and the opportunity to select alternate materials.

(iv) Any Tenant Delay.

4. Repairs and Corrections. Landlord shall require of the General Contractor and any subcontractor constructing the Tenant Improvements no less than a one year express repair and/or replacement warranty covering such work. All manufacturers' and builders' warranties with respect to the Tenant Improvements shall be assigned to Tenant to the extent possible and necessary to assist Tenant in effecting any of Tenant's repair obligations under the Lease without recourse to Landlord. Landlord agrees to enforce for the benefit of Tenant any warranties or guarantees issued in connection with construction of the Tenant Improvements. Tenant shall repair or correct any defective work or materials installed by Tenant or any contractor other than the General Contractor (except subcontractors engaged by the General Contractor), or any work or materials that prove defective as a result of any act or omission of Tenant or any Tenant Party, provided that selection of materials by Tenant is not such an act or omission, and provided further that work and materials done or installed by the General Contractor or its vendors and subcontractors is not such an act or omission. For purposes of this Section, Landlord will not be considered to be Tenant's agent, invitee, licensee, subtenant, customer, client, or guest.

5. Punchlist. Landlord shall provide Tenant with written notice when Landlord believes that substantial completion of the Tenant Improvements has been achieved. Promptly following delivery of such notice, Tenant's Representative and Landlord's Representative shall jointly inspect the Tenant Improvements, and, Landlord and Tenant shall mutually and reasonably

prepare a punchlist of items remaining with respect to the Tenant Improvements that require repair or completion (the "Punchlist"). Pursuant to its contract with Landlord, General Contractor shall make all repairs and completions noted on the Punchlist with respect to the Tenant Improvements within forty-five (45) days (extended for Force Majeure and any Tenant Delay) after receipt of the Punchlist with any Liquidated Damages paid by the General Contractor for a delay in completion of the Punchlist accruing to the benefit of Tenant.

6. Move-In by Tenant. Tenant shall schedule its move into the Expansion Space with Landlord prior to occupying any portion of the Expansion Space.

7. Tenant Representative. Whenever Landlord or any contractor responsible for the Tenant Improvements shall need to communicate with Tenant about the Tenant Improvement related matters, including Change Orders, Landlord or such contractor shall contact Todd Melby at todd.melby@precisionbiosciences.com or (330) 329-4015.

8. Landlord Representative. Whenever Tenant or any contractor responsible for the Tenant Improvements shall need to communicate with Landlord about the Tenant Improvement related matters, including Change Orders, Tenant or such contractor shall contact David.Green@scientificproperties.com, or (919) 605-0804.

EXHIBIT C

TENANTS WITH SUPERIOR RIGHTS OF REFUSAL

1. Cumming Construction Management, Inc. (first floor of Prizery Building); and
2. Roivant Sciences, Inc. (continuous “right of offer” for contiguous space on second floor of Prizery Builidng).

THIRD AMENDMENT TO THE LEASE AGREEMENT

THIS THIRD AMENDMENT TO THE LEASE AGREEMENT (the "Amendment") is made and entered into as of January 12, 2016 by and between VENABLE TENANT, LLC, a North Carolina limited liability company (the "Landlord"), and PRECISION BIOSCIENCES, INC., a Delaware corporation (the "Tenant").

WITNESSETH:

WHEREAS, pursuant to that certain Lease Agreement dated April 5, 2010 by and between Landlord and Tenant, as amended by that certain First Amendment to Lease Agreement dated August 19, 2011, Tenant leased certain premises known as Suite 100 in the Dibrell A Building at 302 East Pettigrew Street, Durham, NC (the Lease Agreement and all amendments thereto shall be referred to herein collectively as the "Lease"); and

WHEREAS, Landlord and Tenant have amended the Lease by Second Amendment to Lease Agreement dated July 13, 2015 (the "Second Amendment");

NOW, THEREFORE, in consideration of cash in hand paid and the promises and the provisions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Landlord and Tenant hereby agree as follows:

1. Definition of Terms. All capitalized terms contained herein and not otherwise defined shall be defined as provided in the Lease.

2. Rent Abatement Payment. Landlord and Tenant have agreed that in consideration of the payment by Landlord to Tenant of $51,023.00, Tenant hereby waives and releases any and all right Tenant may have for any further abatement of Rent (Landlord having already waived Tenant's Rent obligation for January, 2016) as described in the Second Amendment with respect to the portion of their Premises located in Suite A-100 in the Dibrell Building at the Project. For purposes of clarity, Landlord and Tenant acknowledge and agree that the Expansion Commencement Date (as such term is defined in the Second Amendment) shall be January 1, 2016.

3. Dibrell Building. Notwithstanding any provision in the Second Amendment to the contrary, Landlord and Tenant hereby confirm and agree that the total rentable square footage leased by Tenant in the Dibrell Building is 16,701 rentable square, consisting of Suite A-100 of 8,274 rentable square feet, and Suite A-200 of 8,427 rentable square feet.

4. Brokerage. Tenant and Landlord each warrants and represents to the other that it has had no dealings with any real estate broker or agent in connection with this Amendment. Tenant and Landlord each covenants to pay, hold harmless, and indemnify the other from and against any and all costs, expenses, liabilities (including reasonable attorneys' fees), causes of action, claims or suits in connection with any compensation, commission, fee, or charges claimed by any real estate broker or agent with respect to this Amendment or the negotiation thereof, arising out of any act of said party.

4. Severability. In the event any term, covenant or condition of this Amendment, the Lease, or any amendments thereto shall to any extent be invalid or unenforceable, the remainder

shall not be affected thereby and each term, covenant or condition shall be valid and enforceable to the full extent permitted by law.

5. Successors and Assigns. This Amendment shall apply to, inure to the benefit of, and be binding upon the parties hereto and upon their respective heirs, legal representatives, successors and permitted assigns, except as otherwise provided herein.

6. Authority of Parties. Each party hereto hereby certifies that it is authorized to enter into this Amendment, and that those persons signing below on its behalf are authorized to do so.

7. Full Force and Effect. Except as modified hereby, the Lease remains unmodified and in full force and effect.

8. Governing Law. This Amendment shall be governed by and construed in accordance with the laws of the State of North Carolina.

9. Mutual Acknowledgment of Non-Existence of Claims. Except as provided herein, Landlord and Tenant acknowledge and agree that as of the day hereof there are no known claims by either party against the other party hereto arising from the relationship as Landlord and Tenant, respectively, pursuant to the Lease, as amended.

10. Effective Date. The provisions of this Amendment shall be effective as of the day and year first written above.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties hereto have hereunto executed this Amendment as of the day and year first above written.

TENANT:

PRECISION BIOSCIENCES, INC.

By: /s/ Todd Melby
Print Name: Todd Melby
Title: CFO/COO
Date: January 18, 2016

LANDLORD:

VENABLE TENANT, LLC

By: SCIENTIFIC PROPERTIES, LLC,
its managing member

By: /s/ Garril Kueber
Garril Kueber, Limted Manager / CEO
Date: January 18, 2016

FOURTH AMENDMENT TO LEASE AGREEMENT

THIS FOURTH AMENDMENT TO LEASE AGREEMENT (this "Amendment") is made as of the 30th day of September, 2016 by and between **VENABLE CENTER, LLC**, a North Carolina limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

(a) Landlord is the current owner of a group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as "Venable Center" (the "Project"), which comprises Dibrell A ("Dibrell A"), Dibrell B ("Dibrell B"), the Receiving Room (the "Receiving Room") and the Prizery (the "Prizery"). The first and second floors of the Prizery are shown in more detail on **Exhibit B** attached hereto and incorporated herein by reference.

(b) Pursuant to that certain Lease Agreement dated April 5, 2010, as modified by a First Amendment to Lease Agreement dated August 19, 2011 and by a Second Amendment to the Lease Agreement dated July 13, 2015 (the "Second Amendment") and by a Third Amendment to the Lease Agreement dated January 12, 2016 (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC) leases to Tenant certain office space in the Project (the "Current Premises") consisting of approximately 16,701 square feet of rentable area in Dibrell A (Suite A-100 = 8,274 RSF; Suite A-200 = 8,427 RSF, collectively referred to herein as the "Current DA Premises") and 2,863 square feet of rentable area in the Receiving Room (referred to herein as the "Current RR Premises"), as more particularly described in the Lease;

(c) The term of the Lease is currently scheduled to expire July 31, 2021.

(d) Landlord and Tenant have agreed to extend the term of the Lease, to add certain space to the premises demised under the Lease, and to make certain other modifications to the Lease as set forth hereinbelow;

(e) All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

1. The Term of the Lease is hereby extended through July 31, 2024 (the "Expiration Date").

2. Effective as of the respective Expansion Dates set forth below, Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, the following additional premises in the Project, as outlined on Exhibit A attached hereto:

(a) approximately 11,621 Rentable Square Feet ("RSF") located in the Receiving Room (the "RR Expansion Premises"). The Expansion Date for the RR Expansion Premises shall be the 150th day following the date that Landlord delivers possession of the RR Expansion Premises to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order), which delivery date is anticipated to be September 15, 2016 (resulting in an anticipated Expansion Date of February 15, 2017);

(b) approximately 7,494 RSF located on the 2nd floor of the Prizery (the "PR Second Floor Expansion Premises"), as shown on **Exhibit B**. Tenant acknowledges that certain portions of the PR Second Floor Expansion Premises are currently vacant and other portions of the PR Second Floor Expansion Premises are currently occupied by various tenants. Landlord shall deliver possession of each portion of the PR Second Floor Expansion Premises to Tenant as such portion of the PR Second Floor Expansion Premises is vacant and available to be delivered to Tenant (but, so long as Tenant does not commence the conduct of business in any portion of the PR Second Floor Expansion Premises, such partial delivery shall not trigger commencement of the term with respect to the same, nor commencement of the Base Rent "clock," as Tenant will be unable to commence its construction activities until the full floor is delivered in accordance with this Amendment; however, if Tenant commences the conduct of business in any portion of the PR Second Floor Expansion Premises, then the term will commence with respect to all portions of the PR Second Floor Expansion Premises that have been delivered to Tenant). Landlord agrees to endeavor in good faith to terminate or relocate the existing tenants of the PR Second Floor Expansion Premises, so as to deliver possession of each portion of the PR Second Floor Expansion Premises to Tenant as promptly as practicable. The Expansion Date with respect to the entire PR Second Floor Expansion Premises (unless occurring sooner with respect to portions of the PR Second Floor Expansion Premises pursuant to the foregoing provisions of this Section 2(b)) shall be the thirtieth (30th) day following the date that possession of the entire PR Second Floor Expansion Premises is delivered to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order);

(c) approximately 7,416 RSF on the first floor of Dibrell B (the "DB First Floor Expansion Premises"). Tenant acknowledges that the DB First Floor Expansion Premises is currently occupied by a tenant whose lease term expires June 30, 2019, but that such current tenant may be induced to vacate the DB First Floor Expansion Premises sooner than such scheduled lease expiration date. Tenant will take possession of the DB First Floor Expansion Premises as soon as such space is vacant and available. The Expansion Date for the DB First Floor Expansion Premises shall be the 90th day following the date that Landlord delivers possession of the DB First Floor Expansion Premises to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order). Rent shall be paid on the same terms (on a per square foot basis) as the RR Expansion Premises;

(d) approximately 7,416 RSF on the second floor of Dibrell B (the "DB Second Floor Expansion Premises"). Tenant acknowledges that the DB Second Floor Expansion Premises is currently occupied by a tenant whose lease term expires June 30, 2019.

Landlord will use best efforts to cause the current tenant of the DB Second Floor Expansion Premises to vacate such space as soon as possible; provided that Landlord shall not be obligated to offer such current tenant any payment or other economic inducement to vacate such space prior to the expiration of such current tenant's lease term. Tenant will take possession of the DB Second Floor Expansion Premises as soon as such space is vacant and available. The Expansion Date for the DB Second Floor Expansion Premises shall be the 30th day following the date that Landlord delivers possession of the DB Second Floor Expansion Premises to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order). Rent shall be paid on the same terms (on a per square foot basis) as the PR Second Floor Expansion Premises;

3. Base Rent with respect to each Expansion Premises shall be as set forth in the following tables:

RR Expansion Premises (11,621 SF)

Months Following RR Expansion Premises Expansion Date	Annual Base Rent per Rentable Square Foot (NNN)	Monthly Rent
1 - 12	$19.25	$18,642.02
13 - 24	$19.78	$19,155.29
25 - 36	$20.32	$19,678.23
37 - 48	$20.88	$20,220.54
49 - 60	$21.46	$20,782.23
61 - 72	$22.05	$21,353.59
73 - 84	$22.65	$21,934.64
85 - Expiration Date	$23.28	$22,544.74

PR Second Floor Expansion Premises (or respective portions thereof) (7,494 SF)

Months Following PR Second Floor Expansion Premises Expansion Date	Annual Base Rent per Rentable Square Foot (FS)	Monthly Rent
1 - 12	$25.00	$15,612.50
13 - 24	$25.69	$16,043.41
25 - 36	$26.39	$16,480.56
37 - 48	$27.12	$16,936.44
49 - 60	$27.87	$17,404.82
61 - 72	$28.63	$17,879.44
73 - 84	$29.42	$18,372.79
85 - Expiration Date	$30.23	$18,878.64

Landlord and Tenant agree to reasonably document (via e-mail or otherwise in writing) the relevant Expansion Date for each of the Expansion Premises, for the avoidance of confusion or misunderstanding.

DB First Floor Expansion Premises (7,416 SF)

Months Following RR Expansion Premises Expansion Date*	Annual Base Rent per Rentable Square Foot (NNN)	Monthly Rent
1 - 12		
13 - 24	$19.25	$11,896.50
25 - 36	$19.78	$12,224.04
37 - 48	$20.32	$12,557.76
49 - 60	$20.88	$12,903.84
61 - 72	$21.46	$13,262.28
73 - 84	$22.05	$13,626.90
85 - Expiration Date	$22.65	$13,997.70
	$23.28	$14,387.04

DB Second Floor Expansion Premises (7,416 SF)

Months Following PR Second Floor Expansion Premises Expansion Date*	Annual Base Rent per Rentable Square Foot (FS)	Monthly Rent
1 - 12		
13 - 24	$25.00	$15,450.00
25 - 36	$25.69	$15,876.42
37 - 48	$26.39	$16,309.02
49 - 60	$27.12	$16,760.16
61 - 72	$27.87	$17,223.66
73 - 84	$28.63	$17,693.34
85 - Expiration Date	$29.42	$18,181.56
	$30.23	$18,682.14

*Base Rent with respect to the DB First Floor Expansion Premises and the DB Second Floor Expansion Premises shall commence to accrue only as of the respective Expansion Dates applicable to each of such spaces. From and after the respective Expansion Date applicable to each of such spaces, Base Rent shall be payable in the amounts set forth in the foregoing tables (and any rental amounts shown in the foregoing tables as being in effect during the periods preceding such Expansion Dates shall be relevant only for the purpose of determining the applicable escalated rental amounts due from and after such Expansion Dates). The purpose of measuring the periods in the foregoing tables from the Expansion Dates applicable to the RR Expansion Premises and the PR Second Floor Expansion Premises is so that the Base Rent per rentable square foot in effect from time-to-time with respect to the DB First Floor Expansion Premises will be the same as the Base Rent per rentable square foot

in effect with respect to the RR Expansion Premises, and the Base Rent per rentable square foot in effect from time-to-time with respect to the DB Second Floor Expansion Premises will be the same as the Base Rent per rentable square foot in effect with respect to the PR Second Floor Expansion Premises.

Notwithstanding anything in the foregoing to the contrary, provided no Event of Default then exists under the Lease, Landlord agrees to grant Tenant an abatement of the Base Rent due with respect to each of the Expansion Premises, in an amount as set forth herein. With respect to the RR Expansion Premises and the PR Second Floor Expansion Premises, the rental abatement shall be five (5) monthly installments of the Base Rent. With respect to each Expansion Premises having an Expansion Date later than February 1, 2017 (other than the RR Expansion Premises and the PR Second Floor Expansion Premises), the rental abatement shall be the product of (i) five (5) monthly installments of the Base Rent multiplied by (ii) a fraction, the numerator of which is the number of full calendar months remaining in the Term of this Lease as of the Expansion Date applicable to such Expansion Premises and the denominator of which is eighty-nine (89). Such abatement shall be applied to the monthly installments of Base Rent that would otherwise be due for the months commencing with January 2018; provided that, with respect to any Expansion Premises whose Expansion Date occurs later than January 1, 2018, the abatement period shall be the first full and partial calendar months following the Expansion Date applicable to such Expansion Premises.

4. Effective as of the Expansion Date for the RR Expansion Premises (which date is referred to herein as the "RR Adjustment Date"), the Base Rent with respect to the Current RR Premises shall be converted to a "triple-net" rental rate, and Tenant shall pay, with respect to the Current RR Premises, its Proportionate Share of all Operating Expenses from and after the Expansion Date for the RR Expansion Premises. Effective as of the RR Adjustment Date, the Base Rent with respect to the Current RR Premises shall be as set forth in the following table:

Current RR Premises (2,863 SF)

Period	Annual Base Rent per Rentable Square Foot (NNN)	Monthly Rent
RR Adjustment Date – 2/28/17	$15.25	$3,638.40
3/1/17 - 2/28/18	$15.67	$3,738.45
3/1/18 – 2/28/19	$16.10	$3,841.26
3/1/19 –2/28/20	$16.54	$3,946.89
3/1/20 – 2/29/21	$17.00	$4,055.43
3/1/21 – 7/31/21	$17.47	$4,166.96

5. Effective as of August 1, 2021, Base Rent with respect to the Current RR Premises and the Current DA Premises shall be the then-current rates of the Receiving Room (both on a NNN basis), as illustrated in the following tables:

Current RR Premises (2,863 SF)

Period*	Annual Base Rent per Rentable Square Foot (NNN)	Monthly Rent
8/1/21 – 60	$21.46	$5,120.00
61 – 72	$22.05	$5,260.76
73 – 84	$22.65	$5,403.91
85 – Expiration Date	$23.28	$5,554.22

*Escalations based on number of months following RR Expansion Premises Expansion Date, consistent with Section 3 of this Amendment.

Current DA Premises (16,701 SF)

Period*	Annual Base Rent per Rentable Square Foot (NNN)	Monthly Rent
8/1/21 – 60	$21.46	$29,866.96
61 – 72	$22.05	$30,688.09
73 – 84	$22.65	$31,523.14
85 – Expiration Date	$23.28	$32,399.94

*Escalations based on number of months following RR Expansion Premises Expansion Date, consistent with Section 3 of this Amendment.

6. Tenant's Proportionate Share of Operating Expenses with respect to the respective Expansion Premises is as follows:

Expansion Premises	Tenant's Proportionate Share of the Building	Tenant's Proportionate Share of the Project
RR Expansion Premises	79.25482%	12.76767%
PR Second Floor Expansion Premises	22.07039%	8.70729%
DB First Floor Expansion Premises	50.00000%	8.62655%
DB Second Floor Expansion Premises	50.00000%	8.62655%

The Base Rent stated above with respect to the RR Expansion Premises and the DB First Floor Expansion Premises is a "triple-net" rental rate, and Tenant shall pay, with respect to each such Expansion Premises, its Proportionate Share of all Operating Expenses from and after the

Expansion Date applicable to each such Expansion Premises. The Base Rent stated above with respect to the PR Second Floor Expansion Premises and the DB Second Floor Expansion Premises is a "full-service" rental rate, and Tenant shall pay, with respect to each such Expansion Premises, from and after January 1, 2018, its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2017.

7. Landlord hereby agrees to grant Tenant an allowance ("Improvements Allowance") with respect to each Expansion Premises. The Improvements Allowance granted with respect to each Expansion Premises shall be calculated by reference to the Base Improvements Allowance per Rentable Square Foot ("Base Amount") set forth in the following table:

Expansion Premises	Base Improvements Allowance per Rentable Square Foot
RR Expansion Premises	$45.00
PR Second Floor Expansion Premises	$25.00
DB First Floor Expansion Premises	$45.00
DB Second Floor Expansion Premises	$25.00

For the RR Expansion Premises and the PR Second Floor Expansion Premises, the Improvements Allowance shall be the Base Amount set forth in the foregoing table. For each Expansion Premises having an Expansion Date later than February 1, 2017 (other than the RR Expansion Premises and the PR Second Floor Expansion Premises), the Improvements Allowance shall be the product of (i) the Base Amount set forth in the foregoing table multiplied by (ii) a fraction, the numerator of which is the number of full calendar months remaining in the Term of this Lease as of the Expansion Date applicable to such Expansion Premises and the denominator of which is eighty-nine (89).

The Improvements Allowances shall be applied toward the cost of the design and construction of any alterations Tenant desires to perform in the Expansion Premises in conjunction with Tenant's initial occupancy of such Expansion Premises. Any portion of the Improvements Allowances may be applied to pay the fees of the architect and engineers and any project manager employed by Tenant with respect to such alterations, as well as any permit costs and fees.

The cost of Tenant's alterations in each of the Expansion Premises shall be paid first out of the applicable Improvements Allowance until the Improvements Allowance is exhausted. Tenant shall deliver to Landlord, no more frequently than once per month, invoices for work performed hereunder together with any other supporting documentation reasonably requested by Landlord. Provided no Event of Default then exists under the Lease, the Improvements Allowance (or portions thereof) shall be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices for work related to alterations performed by Tenant in the Expansion Premises, accompanied by waivers of liens executed by all contractors employed

by Tenant for the performance of such work. If the cost of Tenant's alterations in the Expansion Premises exceeds the amount of the applicable Improvements Allowance, the excess shall be paid by Tenant after the Improvements Allowance is fully exhausted. Notwithstanding the foregoing, the Improvements Allowance associated with any particular Expansion Premises may be utilized by Tenant in the Expansion Premises with which it is associated and/or in any other Expansion Premises that is delivered to Tenant either concurrently with or following the delivery date of the Expansion Premises with which such Improvements Allowance is associated. Tenant may also submit invoices for an existing or completed Expansion Premises project when a new Improvements Allowance becomes available.

Any portion of the Improvements Allowance that has not been utilized by the date that is twelve (12) months following the last Expansion Date applicable to any of the Expansion Premises (as referenced in Section 2 of this Amendment) shall revert to Landlord.

In no event may any portion of the Improvements Allowances may be utilized with respect to alterations or refurbishment performed in the Current Premises.

8. Landlord hereby agrees to grant Tenant an allowance in the amount of $97,820.00 (the "Refurbishment Allowance"), to be applied toward the cost of performing alterations and refurbishment in the Current Premises. Any portion of the Refurbishment Allowances may be applied to pay the fees of the architect and engineers and any project manager employed by Tenant with respect to such alterations, as well as any permit costs and fees. Provided no Event of Default then exists under the Lease, the Refurbishment Allowance (or portions thereof) shall be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices for alterations or refurbishment performed by Tenant in the Current Premises after the date of this Amendment, accompanied by waivers of liens executed by all contractors employed by Tenant for the performance of such work (to the extent reasonably required). Requisitions shall be submitted by Tenant no more frequently than once per month. If the cost of Tenant's alterations and refurbishment in the Current Premises exceeds the amount of the Refurbishment Allowance, the excess shall be paid by Tenant after the Refurbishment Allowance is exhausted. Additionally, Tenant may elect to apply any unexpended Refurbishment Allowance toward work in any Expansion Premises, on the same terms and conditions as listed in Section 7 above.

9. Landlord acknowledges that, following delivery of the RR Expansion Premises to Tenant, Tenant will be the exclusive user of the “private shipping and receiving area” of the loading dock in the Receiving Room, as shown on the attached **Exhibit A** (the “S&R Area”), except as specifically provided herein. Landlord shall reasonably cooperate with Tenant to facilitate Tenant’s use of the loading dock as the primary user thereof; and Tenant agrees to afford Landlord and other tenants of the Receiving Room reasonable access to and use of such loading dock, provided that such access and use does not materially impair Tenant’s use of such facility. Landlord agrees that it will use best efforts to give Tenant not less than twenty-four (24) hours’ prior notice (which need not be in writing) to access and to use the loading dock so that Tenant can appropriately coordinate (clearance of space and security of items in the space). Tenant, at Tenant’s sole cost, shall relocate the existing mailboxes in the loading dock to a mutually-agreeable location outside the S&R Area, and shall provide a means of access to the IT cabinet that does not require access through the S&R Area, such work to be subject to Landlord’s reasonable prior approval.

10.Tenant shall have the right, at Tenant’s expense and for its own use, to purchase, install, maintain and operate at the Project an emergency power generator (the "Generator") and a fuel tank (the "Tank") for the Generator, subject to the following terms and conditions:

(a) The Generator and Tank and associated wiring shall be installed by contractors reasonably pre-approved by Landlord, in a good and workmanlike manner and in accordance with the reasonable directions of Landlord relative thereto. Tenant and/or its contractors shall provide all appropriate insurance for such installation. Tenant shall deliver to Landlord detailed plans and specifications for the Generator and the Tank (including the proposed location of the Generator and the Tank) and a copy of Tenant's contract for installing the Generator and the Tank, which plans and specifications and contract and the location of the Generator and Tank shall be subject to Landlord's reasonable approval. If deemed desirable by Landlord, Tenant shall cause the space within which the Generator and Tank are located to be screened in a manner that is reasonably acceptable to Landlord.

(b) Tenant shall pay all costs of design, installation, operation, utilization, replacement, maintenance and removal of the Generator and the Tank, including (without limitation) the cost of any piping needed to connect the Generator and the Tank. Any damage to the Project or other property of Landlord or any other tenant resulting from the installation or maintenance of the Generator and Tank shall be promptly repaired at Tenant's sole cost and expense.

(c) Tenant covenants that it will not use its Generator or the Tank in a manner that will unreasonably interfere with Landlord's and/or any current or future tenant's use of the Project.

(d) Tenant shall be responsible for procuring all licenses and permits required for the installation, use or operation of the Generator and the Tank.

(e) The Generator and Tank shall be designed, constructed, installed, maintained and operated in strict compliance with all applicable environmental laws.

(f) Landlord shall have no liability for any damage to, or caused by, the Generator and Tank. Tenant hereby indemnifies and agrees to hold Landlord harmless from any loss or damage which Landlord may sustain in connection with the Generator and Tank, including all liabilities, costs or expenses of any kind or nature incurred in connection with any claim or proceeding brought thereon and the defense thereof.

(g) Tenant is hereby granted nonexclusive easements and licenses for (i) use of any shafts required to install the electrical wiring for the Generator; and (ii) access to the Generator and the Tank at all reasonable times and in emergencies. The Generator shall be connected to the Premises by electrical wiring, the installation of which shall be performed by Tenant’s contractor, at Tenant's sole expense.

(h) At Landlord's request, the Generator and Tank and associated wiring and piping and any screening surrounding the Generator and Tank installed by Tenant hereunder shall be removed by Tenant, by contractors reasonably pre-approved by Landlord, in a good and

workmanlike manner, upon the expiration or earlier termination of the Lease, at Tenant's sole cost and expense.

11. The parking rights granted to Tenant under the Lease shall increase proportionately upon the Expansion Date applicable to each Expansion Premises.

12. This Amendment and all provisions contained herein are contingent upon an executed lease termination agreement between Landlord and the existing tenant ("Roivant") for the PR Second Floor Expansion Premises, providing that the PR Second Floor Expansion Premises shall be surrendered to Landlord on or before January 1, 2017 (the "PR Termination Agreement"). If Landlord does not enter into said PR Termination Agreement within fifteen (15) days of the date of full execution of this Amendment, then Tenant shall be entitled to terminate this Amendment (and all of its obligations hereunder) by written notice delivered to Landlord within thirty (30) days following the date of full execution of this Amendment (unless Landlord has entered into the PR Termination Agreement prior to Tenant's delivery of its termination notice, in which event this Amendment shall remain in force and effect).

13. The Right of Refusal granted to Tenant pursuant to Paragraph 10 of the Second Amendment shall remain in force and effect during the Term of the Lease as extended by this Amendment.

14. Except to the extent any of such suites are sooner leased by Tenant pursuant to its Right of First Refusal, Landlord and Tenant hereby agree to the following "must-take" expansion provisions with respect to Suites 110, 120, 130, and 140 of the Prizery, as shown on **Exhibit B**:

(a) Landlord shall deliver Suite 130 and Suite 140, comprising approximately 3,162 rentable square feet ("PR First Floor Expansion Premises A") to Tenant on or around September 1, 2017 (the PR First Floor Expansion Premises A Target Date"). Landlord will use commercially reasonable efforts to meet the PR First Floor Expansion Premises A Target Date. In the event Landlord is unable to deliver possession of the PR First Floor Expansion Premises A to Tenant on the PR First Floor Expansion Premises A Target Date due to an existing tenant's failure to vacate such space or any other cause beyond Landlord's reasonable control, Landlord shall have no liability to Tenant, and Tenant's obligation to lease the PR First Floor Expansion Premises A shall not be nullified, provided Landlord shall use commercially reasonable efforts to deliver possession of the PR First Floor Expansion Premises A to Tenant as soon as possible following the PR First Floor Expansion Premises A Target Date. The Expansion Date for the PR First Floor Expansion Premises A shall be the 30th day following the date that Landlord delivers possession of PR First Floor Expansion Premises A to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order). Rent shall be paid on the same terms (on a per square foot basis) as the PR Second Floor Expansion Premises, and Tenant shall receive the same Improvement Allowance as the PR Second Floor Expansion Premises, on a per square foot basis, and prorated in accordance with Section 7 of this Amendment.

(b) Landlord shall deliver Suite 110 and Suite 120, comprising approximately 2,722 rentable square feet ("PR First Floor Expansion Premises B") to Tenant on or around November 1, 2018 (the "PR First Floor Expansion Premises B Target Date"). Landlord will use commercially reasonable efforts to meet the PR First Floor Expansion Premises B Target Date.

In the event Landlord is unable to deliver possession of the PR First Floor Expansion Premises B to Tenant on the PR First Floor Expansion Premises B Target Date due to an existing tenant's failure to vacate such space or any other cause beyond Landlord's reasonable control, Landlord shall have no liability to Tenant, and Tenant's obligation to lease the PR First Floor Expansion Premises B shall not be nullified, provided Landlord shall use commercially reasonable efforts to deliver possession of the PR First Floor Expansion Premises B to Tenant as soon as possible following the PR First Floor Expansion Premises B Target Date. The Expansion Date for the PR First Floor Expansion Premises B shall be the 30th day following the date that Landlord delivers possession of PR First Floor Expansion Premises B to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order). Rent shall be paid on the same terms (on a per square foot basis) as the PR Second Floor Expansion Premises, and Tenant shall receive the same Improvement Allowance as the PR Second Floor Expansion Premises, on a per square foot basis, and prorated in accordance with Section 7 of this Amendment. Following the addition of PR First Floor Expansion Premises B to the Premises, Landlord agrees that Tenant may add the previously shared "common space" to its secured area, and Landlord and Tenant will mutually, in good faith, enter into a Lease amendment to document same.

(c) Notwithstanding anything in Paragraph 14(b) above, Tenant acknowledges that the current tenant of Suite 110 has the option to renew the term of its lease for an additional period of three (3) years. In the event the current tenant of Suite 110 timely exercises its renewal option, Landlord shall so notify Tenant in writing (the "Suite 110 Notice") within fifteen (15) business days of Landlord's receipt of same. In the event Landlord does not deliver the Suite 110 Notice to Tenant within fifteen (15) business days of the current tenant's renewal deadline (which renewal deadline Landlord represents, for the purposes of this Amendment, to be April 30, 2018), Landlord shall be conclusively deemed to have represented that the current Suite 110 tenant no longer has any valid right to renew, and Landlord shall initiate work promptly and diligently to meet the PR First Floor Expansion Premises B Target Date. Within thirty (30) days following Tenant's receipt of the Suite 110 Notice, Tenant may elect, by written notice to Landlord, to delete Suite 110 from the expansion space that is subject to the provisions of this Paragraph 14, in which event Landlord shall have no obligation to deliver possession of Suite 110 to Tenant at any time and Tenant shall have no obligation to lease Suite 110 from Landlord at any time. In the event Tenant does not timely exercise its right to delete Suite 110 from the expansion space under this Paragraph 14, then the delivery date for Suite 110 shall be extended to be the last day of the current tenant's three-year renewal term. Tenant's right pursuant to Paragraph 14(b) above to convert common space into secured area shall be inapplicable unless and until Suite 110 (as well as the remainder of PR First Floor Expansion Premises B) becomes part of the Premises demised to Tenant.

15. The Option to Extend granted to Tenant pursuant to Paragraph 11 of the Second Amendment shall remain in force and effect and shall be applicable to the period immediately following the Term of the Lease as extended by this Amendment.

16. Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBRE-Raleigh, LLC and Cushman & Wakefield (the "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Brokers, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or

other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Amendment as of the day and year first above written.

PRIVATE WITNESS:	LANDLORD:
	VENABLE CENTER, LLC
Illegible_____	By: /s/ Esko I. Korhonen
	Title: Member
WITNESS:	TENANT:
	PRECISION BIOSCIENCES, INC.
Illegible_____	By: /s/ Todd Melby
	Title: COO

EXHIBIT A

FLOOR PLANS OF EXPANSION PREMISES

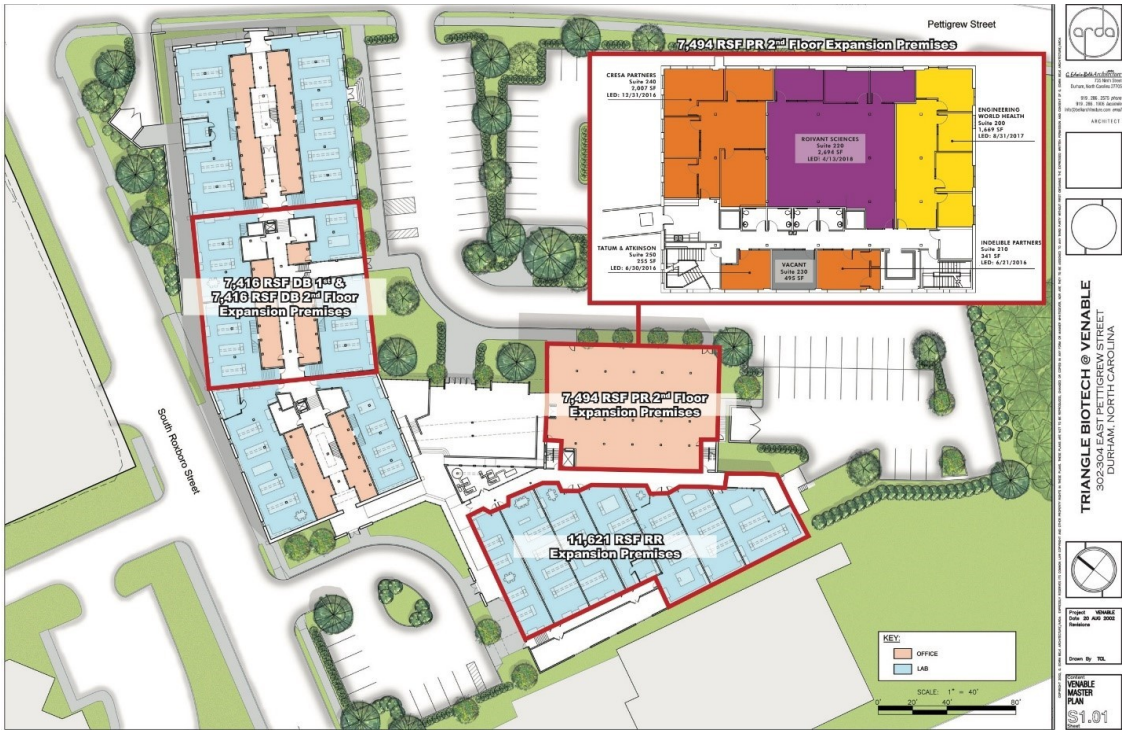
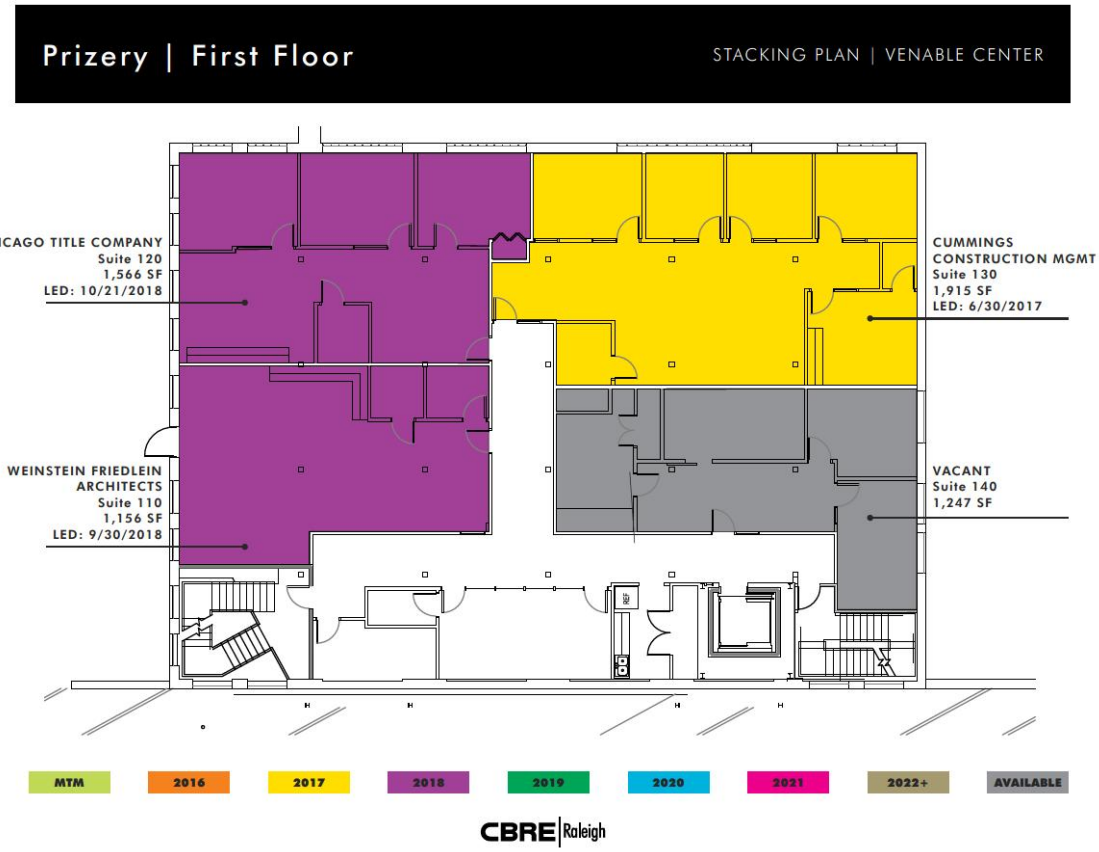
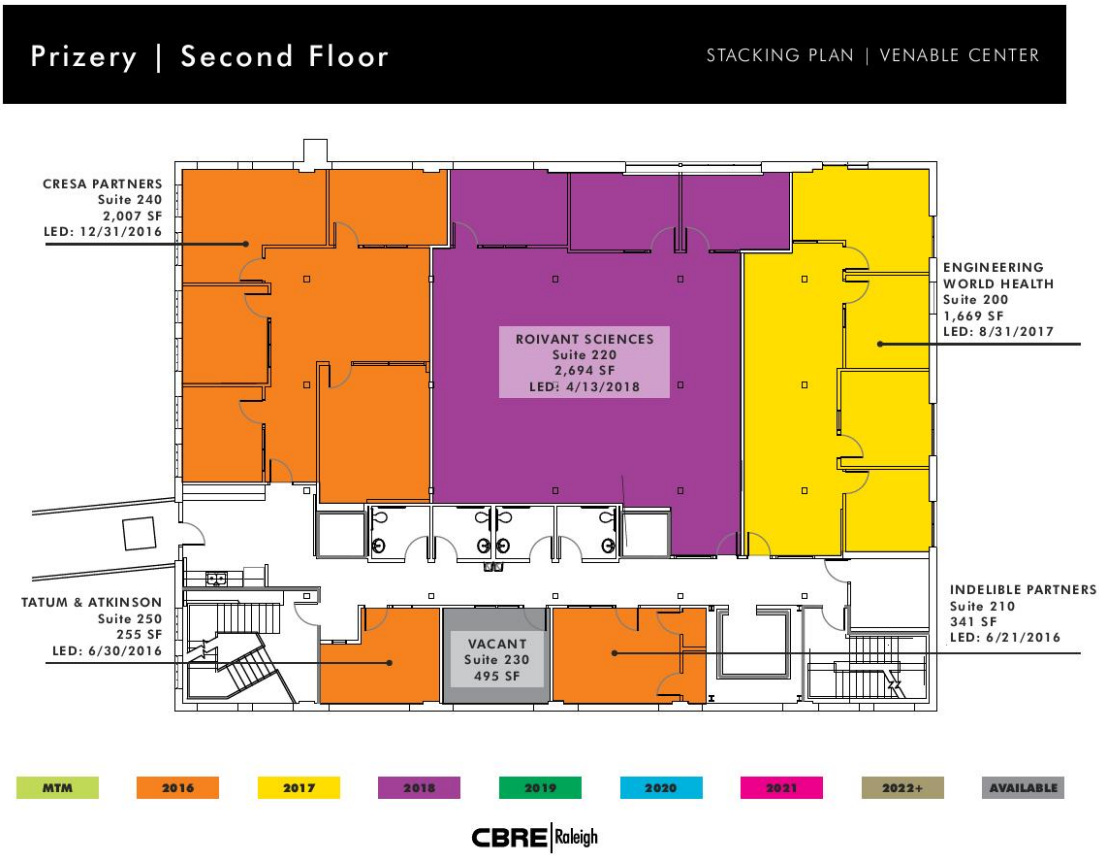


EXHIBIT B


Prizery | First Floor
STACKING PLAN | VENABLE CENTER
CHICAGO TITLE COMPANY
Suite 120
1,566 SF
LED: 10/21/2018
CUMMINGS
CONSTRUCTION MGMT
Suite 130
1,915 SF
LED: 6/30/2017
WEINSTEIN FRIEDLEIN
ARCHITECTS
Suite 110
1,156 SF
LED: 9/30/2018
VACANT
Suite 140
1,247 SF
MTM
2016
2017
2018
2019
2020
2021
2022+
AVAILABLE
CBRE | Raleigh


Prizery | Second Floor
STACKING PLAN | VENABLE CENTER
CRESA PARTNERS
Suite 240
2,007 SF
LED: 12/31/2016
ROIVANT SCIENCES
Suite 220
2,694 SF
LED: 4/13/2018
ENGINEERING WORLD HEALTH
Suite 200
1,669 SF
LED: 8/31/2017
TATUM & ATKINSON
Suite 250
255 SF
LED: 6/30/2016
VACANT
Suite 230
495 SF
INDELIBLE PARTNERS
Suite 210
341 SF
LED: 6/21/2016
MTM
2016
2017
2018
2019
2020
2021
2022+
AVAILABLE
CBRE | Raleigh

FIFTH AMENDMENT TO LEASE AGREEMENT

THIS FIFTH AMENDMENT TO LEASE AGREEMENT (this "Amendment") is made as of the 24th day of January, 2018 by and between **VENABLE CENTER, LLC**, a North Carolina limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

(a) Landlord is the current owner of a group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as "Venable Center" (the "Project"), of which one of the buildings is known as the Prizery (the "Prizery") and one of the buildings is known as Dibrell C ("Dibrell C").

(b) Pursuant to that certain Lease Agreement dated April 5, 2010, as modified by a First Amendment to Lease Agreement dated August 19, 2011 and by a Second Amendment to the Lease Agreement dated July 13, 2015 (the "Second Amendment") and by a Third Amendment to the Lease Agreement dated January 12, 2016, and by a Fourth Amendment to the Lease Agreement dated September 30, 2016 (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC) leases to Tenant certain office space in the Project (the "Current Premises"), as more particularly described in the Lease;

(c) Landlord and Tenant have agreed to add certain space to the premises demised under the Lease, and to make certain other modifications to the Lease as set forth hereinbelow;

(d) All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

1. Effective as of a date to be selected by Landlord and falling between May 1, 2018 and May 15, 2018 (the "Third Floor Expansion Date"), Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, Suite 300 (6,358 rsf), Suite 330 (546 rsf) and Suite 340 (202 rsf) in the Prizery (collectively, the "Third Floor Expansion Premises"), as outlined on Exhibit A attached hereto.

2. Base Rent with respect to the Third Floor Expansion Premises shall commence to be payable on the date which is three (3) months following the Third Floor Expansion Date (the "TFEP Rent Date"), and shall thereafter be as follows:

Period	Annual Base Rent per Rentable Square Foot (FS)	Monthly Rent
TFEP Rent Date – 2/28/19	$25.69	$15,212.76*
3/1/19 – 2/29/20	$26.39	$15,627.28
3/1/20 – 2/28/21	$27.12	$16,059.56
3/1/21 – 2/28/22	$27.87	$16,503.68
3/1/22 – 2/28/23	$28.63	$16,953.73
3/1/23 – 2/29/24	$29.42	$17,421.54
3/1/24 – 7/31/24	$30.23	$17,901.20

*prorated for any partial month

Notwithstanding anything in the foregoing to the contrary, provided no Event of Default then exists under the Lease, Landlord agrees to grant Tenant an abatement of the Base Rent due with respect to the Third Floor Expansion Premises, in an amount equal to $63,065.73. Such abatement shall be applied to the first monthly installments of Base Rent that would otherwise be due for the Third Floor Expansion Premises.

3. Tenant's Proportionate Share of Operating Expenses with respect to the Third Floor Expansion Premises is 20.92770% of the Prizery and 8.25647% of the Project. Tenant shall pay, with respect to the Third Floor Expansion Premises, from and after the thirtieth (30th) day following the Third Floor Expansion Date, its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2017.

4. Landlord hereby agrees to grant Tenant an allowance ("Third Floor Improvements Allowance") with respect to the Third Floor Expansion Premises in the amount of $151,701.12. The Third Floor Improvements Allowance shall be applied toward the cost of the design and construction of any alterations Tenant desires to perform in the Third Floor Expansion Premises in conjunction with Tenant's initial occupancy of such Third Floor Expansion Premises. Any portion of the Third Floor Improvements Allowance may be applied to pay the fees of the architect and engineers and any construction supervision, contractors' overhead and profit charges, along with fees for any project manager employed by Tenant with respect to such alterations, as well as any licensing and permitting costs and fees.

The cost of Tenant's alterations in the Third Floor Expansion Premises shall be paid first out of the Third Floor Improvements Allowance until the Third Floor Improvements Allowance is exhausted. Tenant shall deliver to Landlord, no more frequently than once per month, invoices for work performed hereunder together with any other supporting documentation reasonably requested by Landlord. Provided no Event of Default then exists under the Lease, the Third Floor Improvements Allowance (or portions thereof) shall be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices for work related to alterations performed by Tenant in the Third Floor Expansion Premises, accompanied by waivers of liens executed by all contractors employed by Tenant for the performance of such work. If the cost of Tenant's alterations in the Third Floor Expansion Premises exceeds the amount of the Third Floor

Improvements Allowance, the excess shall be paid by Tenant after the Third Floor Improvements Allowance is fully exhausted.

Any portion of the Third Floor Improvements Allowance that has not been utilized by the date that is twelve (12) months following the Third Floor Expansion Date shall revert to Landlord.

5. The parking rights granted to Tenant under the Lease shall increase proportionately upon the Third Floor Expansion Date.

6. Effective as of the "Dibrell Expansion Date" (as defined below), Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, approximately 2,848 rentable square feet of space in the Dibrell C building (collectively, the "Dibrell Expansion Premises"), as outlined on Exhibit B attached hereto. In the event the final BOMA calculation of the rentable area of the Dibrell Expansion Premises discloses that the rentable area of such space is less than 2,848 rentable square feet, the Monthly Rent set forth in Paragraph 7 below and Tenant's Proportionate Share of Operating Expenses with respect to the Dibrell Expansion Premises set forth in Paragraph 8 below shall be reduced pro rata. The "Dibrell Expansion Date" shall be the date following the date that the current tenant of a portion of the Dibrell Expansion Premises, One Cow Standing, LLC, vacates the space occupied by such tenant, so that the space may be delivered by Landlord to Tenant. The Dibrell Expansion Date is anticipated to occur on April 1, 2020, but Landlord shall have no liability to Tenant and this Amendment shall not be rendered void or voidable in the event Landlord is unable to deliver possession of the Dibrell Expansion Premises to Tenant by the anticipated Dibrell Expansion Date because the current tenant fails to vacate by such date (despite Landlord's commercially reasonable efforts to achieve same). In the event the current tenant vacates the Dibrell Expansion Premises prior to the anticipated Dibrell Expansion Date (such vacancy Landlord shall use commercially reasonable efforts to notify Tenant of at least thirty (30) days in advance), the Dibrell Expansion Date shall be the 90th day following the date that Landlord delivers possession of the Dibrell Expansion Premises to Tenant (in good and tenantable condition, broom clean, with all systems serving same in good working order). Landlord and Tenant agree to reasonably document (via e-mail or otherwise in writing) the Dibrell Expansion Date, for the avoidance of confusion or misunderstanding.

7. Base Rent with respect to the Dibrell Expansion Premises shall commence to be payable on the date which is three months following the Dibrell Expansion Date, and shall thereafter be as follows:

Period	Annual Base Rent per Rentable Square Foot (NNN)	Monthly Rent
4/1/20 – 3/31/21	$20.88	$4,955.52
4/1/21 – 3/31/22	$21.46	$5,093.17
4/1/22 – 3/31/23	$22.05	$5,233.20
4/1/23 – 3/31/24	$22.65	$5,375.60
4/1/24 – 7/31/24	$23.28	$5,525.12

The foregoing rent schedule presumes that the Dibrell Expansion Date will be no earlier than April 1, 2020. In the event the Dibrell Expansion Date occurs earlier than April 1, 2020, then (i) Annual

Base Rent for any period falling between April 1, 2018 and March 31, 2019 for which rent is payable with respect to the Dibrell Expansion Premises shall be calculated based upon an annual rate of $19.78 per rentable square foot, and (ii) Annual Base Rent for any period falling between April 1, 2019 and March 31, 2020 for which rent is payable with respect to the Dibrell Expansion Premises shall be calculated based upon an annual rate of $20.32 per rentable square foot.

Notwithstanding anything in the foregoing to the contrary, provided no Event of Default then exists under the Lease, Landlord agrees to grant Tenant an abatement of the Base Rent due with respect to the Dibrell Expansion Premises, in an amount equal to the product of (i) five (5) monthly installments of the Base Rent initially applicable to the Dibrell Expansion Premises multiplied by (ii) a fraction, the numerator of which is the number of full calendar months remaining in the Term of the Lease as of the Dibrell Expansion Date and the denominator of which is eighty-nine (89). Such abatement shall be applied to the first monthly installments of Base Rent that would otherwise be due for the Dibrell Expansion Premises.

8. Tenant's Proportionate Share of Operating Expenses with respect to the Dibrell Expansion Premises is 14.19% of Dibrell C and 3.30909% of the Project. Tenant shall pay, with respect to the Dibrell Expansion Premises, from and after the thirtieth (30th) day following the Dibrell Expansion Date, its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2017.

9. Landlord hereby agrees to grant Tenant an allowance ("Dibrell Improvements Allowance") with respect to the Dibrell Expansion Premises in an amount (per rentable square foot in the Dibrell Expansion Premises) equal to the product of (i) $45.00 multiplied by (ii) a fraction, the numerator of which is the number of full calendar months remaining in the Term of this Lease as of the Dibrell Expansion Date and the denominator of which is eighty-nine (89). The Improvements Allowance shall be applied toward the cost of the design and construction of any alterations Tenant desires to perform in the Dibrell Expansion Premises in conjunction with Tenant's initial occupancy of such Dibrell Expansion Premises. Any portion of the Dibrell Improvements Allowance may be applied to pay the fees of the architect and engineers and any construction supervision, contractors' overhead and profit charges, along with fees for any project manager employed by Tenant with respect to such alterations, as well as any licensing and permitting costs and fees.

The cost of Tenant's alterations in the Dibrell Expansion Premises shall be paid first out of the Dibrell Improvements Allowance until the Dibrell Improvements Allowance is exhausted. Tenant shall deliver to Landlord, no more frequently than once per month, invoices for work performed hereunder together with any other supporting documentation reasonably requested by Landlord. Provided no Event of Default then exists under the Lease, the Dibrell Improvements Allowance (or portions thereof) shall be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices for work related to alterations performed by Tenant in the Dibrell Expansion Premises, accompanied by waivers of liens executed by all contractors employed by Tenant for the performance of such work. If the cost of Tenant's alterations in the Dibrell Expansion Premises exceeds the amount of the Dibrell Improvements Allowance, the excess shall be paid by Tenant after the Dibrell Improvements Allowance is fully exhausted.

Any portion of the Dibrell Improvements Allowance that has not been utilized by the date that is twelve (12) months following the Dibrell Expansion Date shall revert to Landlord.

10.The parking rights granted to Tenant under the Lease shall increase proportionately upon the Dibrell Expansion Date.

11.Landlord acknowledges that it is currently still working with Tenant to resolve certain HVAC issues, and will continue to work together with Tenant in good faith to accommodate Tenant's laboratory requirements related to same.

12.Landlord and Tenant further anticipate that, as previously discussed, a small amount of space may be added to the Dibrell Expansion Premises, after execution of this Amendment (and the parties agree that such space shall be subject to all economic terms and conditions of Section 7, 8, and 9 of this Amendment) To the extent reasonably requested by Landlord or Tenant, the parties shall enter into a confirmatory amendment or side letter after such space is added.

13.Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBRE-Raleigh, LLC and Cushman & Wakefield (the "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Brokers, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

14.As modified by this Amendment, the Lease continues in full force and effect.

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Amendment as of the day and year first above written.

PRIVATE WITNESS:	LANDLORD:
	VENABLE CENTER, LLC
Illegible	By: /s/ Esko I. Korhonen
	Title President

WITNESS:	TENANT:
	PRECISION BIOSCIENCES, INC.
/s/ Renee Cramer	By: /s/ Todd Melby
	Title: COO

EXHIBIT A

FLOOR PLAN OF THIRD FLOOR EXPANSION PREMISES (Suite 300 & Suite 340)

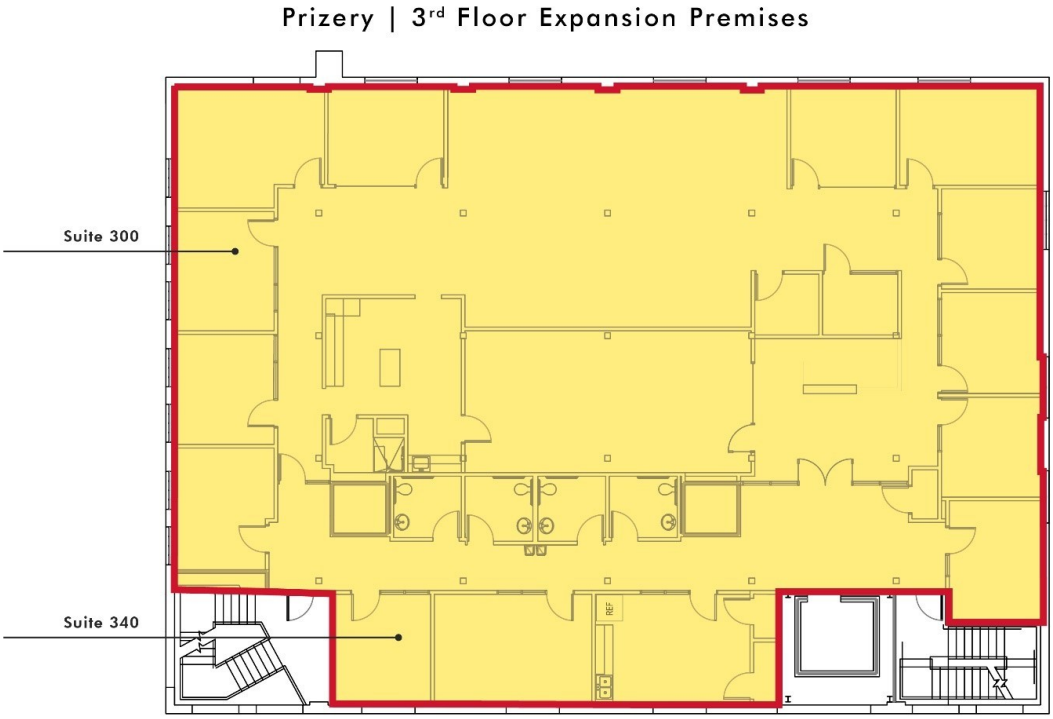
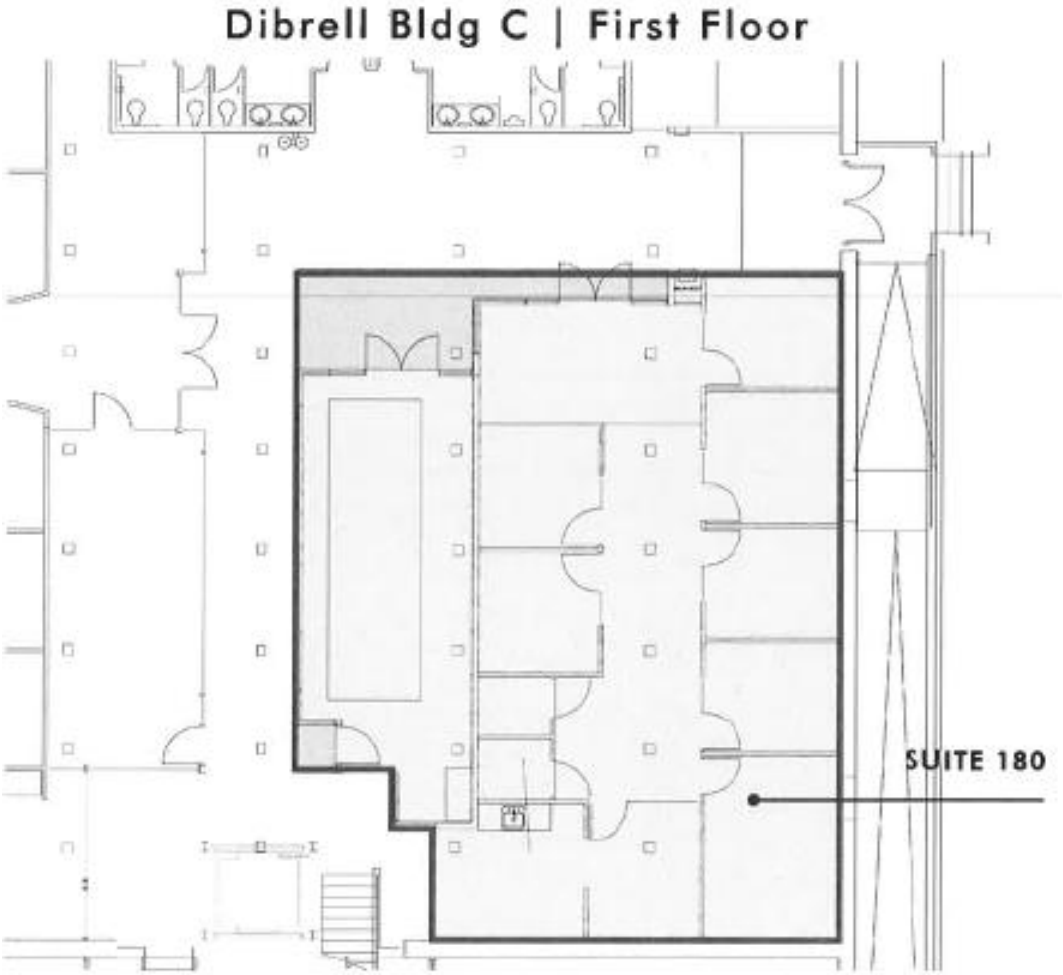


EXHIBIT B

FLOOR PLAN OF DIBRELL EXPANSION PREMISES



SIXTH AMENDMENT TO LEASE AGREEMENT

THIS SIXTH AMENDMENT TO LEASE AGREEMENT (this "Amendment") is made as of the 06 day of August, 2018 by and between **VC OWNER, LLC**, a North Carolina limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

A. Pursuant to that certain Lease Agreement dated April 5, 2010, as modified by a First Amendment to Lease Agreement dated August 19, 2011, and by a Second Amendment to Lease Agreement dated July 13, 2015, and by a Third Amendment to Lease Agreement dated January 12, 2016, and by a Fourth Amendment to Lease Agreement dated September 30, 2016, and by a Fifth Amendment to Lease Agreement dated January 24, 2018 (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC) leases to Tenant certain office space in the group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as “Venable Center” (the “Project”), as more particularly described in the Lease;

B. Landlord and Tenant have agreed to add certain space to the premises demised under the Lease, and to make certain other modifications to the Lease as set forth hereinbelow;

C. All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

1. Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, approximately 1,626 rentable square feet of space known as Suite C-185 (the "Suite C-185 Premises") in the Dibrell Building (the “Building”) in the Project, as outlined on Exhibit A attached hereto. The Term of the Lease with respect to the Suite C-185 Premises shall commence as of September 1, 2018, and shall be coterminous with the Term applicable to the remainder of the Premises. From and after September 1, 2018, the Suite C-185 Premises shall constitute a portion of the "Premises" for all purposes under the Lease. Landlord shall have no liability to Tenant in the event Landlord is unable to deliver possession of the Suite C-185 Premises to Tenant on September 1, 2018 due to the holding over by the prior tenant thereof or due to any other matter beyond Landlord’s reasonable control; however, in such event, rent with respect to the Suite C-185 Premises will not begin to accrue until the first business day after Landlord is able to deliver possession of the Suite C-185 Premises to Tenant, broom clean and free of any prior tenancy.

2. From and after September 1, 2018, Tenant shall pay monthly Base Rent with respect to the Suite C-185 Premises in the amount of $3,929.50 per month, which amount shall escalate by 3.0% per annum on September 1, 2019 and each September 1st thereafter. Notwithstanding the foregoing, provided Tenant is not then in default under the Lease beyond

any applicable notice and cure period, Landlord agrees to abate the first four (4) monthly installments of Base Rent with respect to the Suite C-185 Premises (only).

3. Commencing on January 1, 2019, Tenant shall pay Additional Rent with respect to the Suite C-185 Premises pursuant to Section 6 of the Lease. With respect to the Suite C-185 Premises (only), Tenant's Proportionate Share shall be 3.14714% for the Building and 1.89723% for the Project, and Tenant shall pay its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2018.

4. Tenant shall accept the Suite C-185 Premises in their "as is" condition (subject to Landlord's continuing repair and maintenance obligations, as outlined in Section 10 of the Lease (as may be amended)), and Landlord shall have no obligation to make any alterations or improvements thereto whatsoever. Any alterations that Tenant desires to make in the Suite C-185 Premises shall be subject to all the terms and conditions set forth in Section 11 of the Lease. Landlord hereby agrees to grant Tenant an allowance (the "Granted Allowance") in the amount of $32,520.00, to be applied toward the cost (including architectural and engineering fees) of alterations performed by Tenant in the Suite C-185 Premises. The Granted Allowance will be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices with respect to such alterations, together with lien releases from Tenant's contractor(s) and any other supporting documentation reasonably required by Landlord. Any portion of the Granted Allowance that has not been applied (or contracted to be applied) in the manner set forth above by March 1, 2019 shall revert to Landlord, and Tenant shall have no further rights with respect thereto.

5. Concurrently with its execution of this Amendment, Tenant shall deliver to Landlord the sum of $3,929.50, which shall be added to Tenant's existing Security Deposit, and which combined sum shall continue to be held by Landlord throughout the Term pursuant to the provisions of Section 9 of the Lease.

6. Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBRE-Raleigh, LLC and Cushman & Wakefield (the "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Brokers, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

7. This Amendment and all provisions contained herein are contingent upon an executed lease termination agreement between Landlord and the existing tenant ("RS&H, Inc.") for the Suite C-185 Premises, providing that the Suite C-185 Premises shall be surrendered to Landlord on or before August 31, 2018 (the "RS&H Termination Agreement"). If Landlord does not enter into said RS&H Termination Agreement within fifteen (15) days of the date of full execution of this Amendment, then Tenant shall be entitled to terminate this Amendment (and all of its obligations hereunder) by written notice delivered to Landlord within thirty (30) days following the date of full execution of this Amendment (unless Landlord has entered into the RS&H Termination Agreement prior to Tenant's delivery of its termination notice, in which event this Amendment shall remain in force and effect).

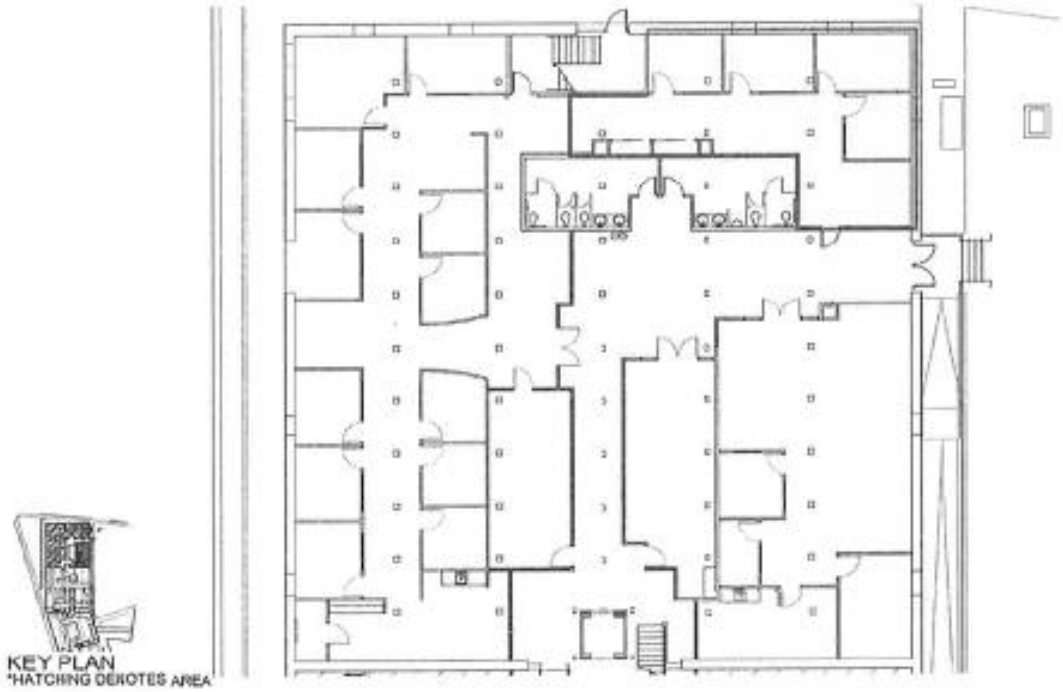
8. As modified by this Amendment, the Lease continues in full force and effect.

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Amendment as of the day and year first above written.

PRIVATE WITNESS:	LANDLORD:
	VC OWNER, LLC
_____	By:
	Title: Authorized Signatory
WITNESS:	TENANT:
	PRECISION BIOSCIENCES, INC.
/s/ Matt Kane	By: Matt Kane
	Title: CEO

EXHIBIT A

FLOOR PLAN OF SUITE C-185 PREMISES



AMENDED AND RESTATED SEVENTH AMENDMENT TO LEASE AGREEMENT

THIS **AMENDED AND RESTATED SEVENTH AMENDMENT TO LEASE AGREEMENT** (this "Amendment") is made as of the ___ day of February, 2019 (the "Effective Date") by and between **VC OWNER, LLC**, a Delaware limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

A. Pursuant to that certain Lease Agreement dated April 5, 2010, as modified by a First Amendment to Lease Agreement dated August 19, 2011, and by a Second Amendment to Lease Agreement dated July 13, 2015, and by a Third Amendment to Lease Agreement dated January 12, 2016, and by a Fourth Amendment to Lease Agreement dated September 30, 2016 (the "Fourth Amendment"), and by a Fifth Amendment to Lease Agreement dated January 24, 2018 (the "Fifth Amendment"), by a Sixth Amendment to Lease Agreement dated August 6, 2018, and by a Seventh Amendment to Lease Agreement (the "Seventh Amendment") dated November 14, 2018 (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC) leases to Tenant certain office space in the group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as "Venable Center" (the "Project"), as more particularly described in the Lease;

B. Landlord and Tenant have agreed to add certain space to the premises demised under the Lease, to amend, restate, supersede, and replace that certain Seventh Amendment, and to make certain other modifications to the Lease as set forth hereinbelow; and

C. All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

1. *Premises*. Subject to Section 7 of this Amendment, Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, (i) approximately 7,416 rentable square feet of space known as Suite WB100 (the "Suite WB100 Premises") in Dibrell B, which is located within the Dibrell Building (the "Building") in the Project, as outlined on Exhibit A-1 attached hereto and incorporated herein and (ii) approximately 7,416 rentable square feet of space known as Suite WB200 (the "Suite WB200 Premises", together with the Suite WB100 Premises, collectively, the "Premises") in the Building in the Project, as outlined on Exhibit A-2 attached hereto and incorporated herein. The Term of the Lease with respect to the Suite WB100 Premises shall commence as of March 1, 2019 (the "Suite WB100 Premises Seventh Amendment Commencement Date") and shall be coterminous with the Term applicable to the remainder of the Premises. The Term of the Lease with respect to the Suite WB200 Premises shall commence as of May 1, 2019 (the "Suite WB200 Premises Seventh Amendment Commencement Date", together with the Suite WB100 Premises Seventh Amendment Commencement Date, collectively, the "Seventh Amendment Commencement Date") and shall be coterminous with the Term applicable to the remainder of the Premises. From and after the Suite WB100 Premises Seventh Amendment Commencement Date and the Suite WB200 Premises Seventh Amendment Commencement Date, respectively, the Suite WB100 Premises and the Suite WB200 Premises, respectively, shall constitute a portion of the "Premises" for all purposes under the Lease. Landlord shall have no liability to Tenant in the event Landlord is unable to deliver possession of the Suite WB100 Premises and the Suite WB200 Premises to Tenant on the Suite WB100 Premises Seventh Amendment Commencement Date and the Suite WB200 Premises Seventh Amendment Commencement Date, respectively, due to the holding over by the prior tenants thereof or due to any other matter beyond Landlord's reasonable control (and further provided that Landlord shall use commercially reasonable efforts

to enforce its rights under the existing lease agreements as modified by the Amended and Restated Lease Termination Agreement, as hereinafter defined); however, in such event, Base Rent with respect to the Suite WB100 Premises and the Suite WB200 Premises, respectively, will not begin to accrue until the first business day after Landlord is able to deliver possession of the Suite WB100 Premises and the Suite WB200 Premises to Tenant, broom clean and free of any prior tenancy.

As of the Effective Date, the Suite WB100 Premises and the Suite WB200 Premises are occupied collectively by Hutson Law Office, P.A. ("Hutson Law") and Richard M. Hutson II, Chapter 13 Standing Trustee ("Chapter 13") with Hutson Law occupying a portion of Suite WB200 Premises in premises known as of the Effective Date as Suite B-260 and with Chapter 13 occupying Suite WB100 Premises and a portion of Suite WB200 Premises in premises known as of the Effective Date as Suite B-140. For purposes of clarity, as of the Seventh Amendment Commencement Date, the suites designated as of the Effective Date as Suite B-140 and Suite B-260 shall no longer have such designations and such premises shall be reconfigured and thereafter be known as Suite WB100 Premises and Suite WB200 Premises. Additionally, for purposes of clarity, Suite WB100 Premises is referred to in the Fourth Amendment as DB First Floor Expansion Premises and Suite WB200 Premises is referred to in the Fourth Amendment as DB Second Floor Expansion Premises.

2. *Rent*.

(a) *Suite WB100 Premises*. Except as set forth in Section 2(c) hereof, from the Suite WB100 Premises Seventh Amendment Commencement Date until the 90th day thereafter (the "100 Rent Commencement Date"), Tenant shall not be obligated to pay Base Rent or Operating Expenses with respect to the Suite WB100 Premises while it constructs the tenant improvements in Suite WB100 Premises. From and after the 100 Rent Commencement Date, Tenant shall pay Base Rent with respect to the Suite WB100 Premises only in accordance with the following rent table:

Period	Rate	Annual Base Rent	Monthly Base Rent
100RCD*– January 31, 2020	$20.32	N/A	$12,557.76**
February 1, 2020 – January 31, 2021	$20.88	$154,846.08	$12,903.84
February 1, 2021 – January 31, 2022	$21.46	$159,147.36	$13,262.28
February 1, 2022 – January 31, 2023	$22.05	$163,522.80	$13,626.90
February 1, 2023 – January 31, 2024	$22.65	$167,972.40	$13,997.70
February 1, 2024 – July 31, 2024	$23.28	N/A	$14,387.04

*100 Rent Commencement Date.

**Notwithstanding anything in the Lease to the contrary (and specifically deleting the reference to the abatement of Base Rent for the DB First Floor Expansion Premises set forth in Section 3 of the Fourth Amendment), Landlord will forebear the obligation of Tenant to pay Base Rent only for the first three (3) months following the 100 Rent Commencement Date and a portion of the fourth (4th) month following the 100 Rent Commencement Date in the total amount of $39,831.14 (the "Suite WB100 Abated Payments").

(b) *Suite WB200 Premises*. Except as set forth in Section 2(c) hereof, from the Suite WB200 Premises Seventh Amendment Commencement Date until the 30th day thereafter (the "200 Rent Commencement Date"), Tenant shall not be obligated to pay Base Rent or Operating Expenses with respect to the Suite WB200 Premises while it constructs the tenant improvements in Suite WB200 Premises. From and after the 200 Rent Commencement Date, Tenant shall pay Base Rent with respect to the Suite WB200 Premises only in accordance with the following rent table:

Period	Rate	Annual/Periodic Base Rent	Monthly Base Rent
200RCD* – March 31, 2020	$26.39	N/A	$16,309.02**
April 1, 2020 – March 31, 2021	$27.12	$201,121.92	$16,760.16
April 1, 2021 – March 31, 2022	$27.87	$206,683.92	$17,223.66
April 1, 2022 – March 31, 2023	$28.63	$212,320.08	$17,693.34
April 1, 2023 – March 31, 2024	$29.42	$218,178.72	$18,181.56
April 1, 2024 – July 31, 2024	$30.23	N/A	$18,682.14

*200 Rent Commencement Date

**Notwithstanding anything in the Lease to the contrary (and specifically deleting the reference to the abatement of Base Rent for the DB Second Floor Expansion Premises set forth in Section 3 of the Fourth Amendment), Landlord will forebear the obligation of Tenant to pay Base Rent only for the first three (3) months following the 200 Rent Commencement Date and a portion of the fourth (4th) month following the 200 Rent Commencement Date in the total amount of $52,078.65 (the "Suite WB200 Abated Payments").

(c) As a part of Tenant's willingness to incentivize Hutson Law and Chapter 13's early terminations of the Premises in order to facilitate Tenant's own leasing of the Premises, Tenant has agreed to pay a portion of the rent payments owed by Hutson Law and Chapter 13 to Landlord for the Premises. Notwithstanding anything in the Lease to the contrary, Landlord and Tenant hereby acknowledge and agree that Tenant shall make the following payments for the Premises to Landlord on or before the following dates:

Payment Due Date	Amount Due
March 1, 2019	$12,557.76
April 1, 2019	$12,557.76
May 1, 2019	$28,866.78
June 1, 2019	$28,866.78

3. *Additional Rent*.

(a) *Suite WB100 Premises*. Commencing on the 100 Rent Commencement Date, Tenant shall pay Additional Rent with respect to the Suite WB100 Premises pursuant to Section 6 of the Lease. With respect to the Suite WB100 Premises only, Tenant's Proportionate Share shall be (i) 14.36179%, which is the ratio of 7,416 (the rentable square footage of the Suite WB100 Premises) to 51,637 (the rentable square footage of the Building) for the Building, and (ii) 8.66436%, which is the ratio of 7,416 (the rentable square footage of the Suite WB100 Premises) to 85,592 (the rentable square footage of the Project) for the Project. Notwithstanding anything in the Lease to the contrary, with respect to the Suite WB100 Premises only, the Base Rent is a "triple-net" rental rate, and Tenant shall pay its Proportionate Share of all Operating Expenses from and after the Suite WB100 Premises Seventh Amendment Commencement Date. For purposes of clarity, the percentages set forth in the table in Section 6 of the Fourth Amendment for Tenant's Proportionate Share of the Building and Tenant's Proportionate Share of Project for DB First Floor Expansion Premises are hereby deleted in their entirety.

(b) *Suite WB200 Premises*. Commencing on the 200 Rent Commencement Date, Tenant shall pay Additional Rent with respect to the Suite WB200 Premises pursuant to Section 6 of the Lease. With respect to the Suite WB200 Premises (only), Tenant's Proportionate Share shall be (i) 14.36179%, which is the ratio of 7,416 (the rentable square footage of the Suite WB200 Premises) to 51,637 (the rentable

square footage of the Building) for the Building, and (ii) 8.66436%, which is the ratio of 7,416 (the rentable square footage of the Suite WB200 Premises) to 85,592 (the rentable square footage of the Project) for the Project. Notwithstanding anything in the Lease to the contrary, with respect to the Suite WB200 Premises only, the Base Rent is a modified "full-service" rental rate, and commencing on the Suite WB200 Premises Seventh Amendment Commencement Date, Tenant shall pay its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2017. For purposes of clarity, the percentages set forth in the table in Section 6 of the Fourth Amendment for the Tenant's Proportionate Share of the Building and Tenant's Proportionate Share of Project for DB Second Floor Expansion Premises are hereby deleted in their entirety.

4. *Tenant Improvements*. Subject to this Section 4, Tenant shall accept the Suite WB100 Premises and Suite WB200 Premises in their "as is" condition (subject to Landlord's continuing repair and maintenance obligations, as outlined in Section 10 of the Lease (as may be amended)), and Landlord shall have no obligation to make any alterations or improvements thereto whatsoever (provided that Landlord shall deliver same in good and tenantable condition, broom clean, with all systems serving same in good working order). Any alterations that Tenant desires to make in the Suite WB100 Premises and Suite WB200 Premises shall be subject to all the terms and conditions set forth in Section 11 of the Lease. Notwithstanding anything in the Lease to the contrary (and specifically deleting the references to the Improvements Allowances (as defined in Section 7 of the Fourth Amendment) for the DB First Floor Expansion Premises and the DB Second Floor Expansion Premises in Section 7 of the Fourth Amendment), Landlord hereby agrees to grant Tenant (i) an allowance in the amount of $217,480.45 (i.e. $29.33 per rentable square foot multiplied by 7,416 rentable square feet) (the "Suite WB100 Granted Allowance") to be applied toward the cost (including architectural and engineering fees) of alterations performed by Tenant in the Suite WB100 Premises and (ii) an allowance in the amount of $124,988.76 (the "Suite WB200 Granted Allowance", together with the Suite WB100 Granted Allowance, collectively, the "Granted Allowance") to be applied toward the cost of the design and construction of any alterations Tenant desires to perform in Suite WB100 Premises and Suite WB200 Premises, respectively, in conjunction with Tenant's initial occupancy of Suite WB100 Premises and Suite WB200. Any portion of the Granted Allowance may be applied to pay the fees of the architect and engineers and any construction supervision, contractors' overhead and profit charges, along with fees for any project manager employed by Tenant with respect to such alterations, as well as any licensing and permitting costs and fees; provided, the Suite WB100 Granted Allowance may only be used for the Suite WB100 Premises and the Suite WB200 Granted Allowance may only be used for the Suite WB200 Premises.

The cost of Tenant's alterations in the Suite WB100 Premises shall be paid first out the Suite WB100 Granted Allowance until the Suite WB100 Granted Allowance is exhausted (at which time Tenant shall be fully responsible for the cost of any further alterations), and the cost of Tenant's alteration in the Suite WB200 Premises shall be paid first out the Suite WB200 Granted Allowance until the Suite WB200 Allowance is exhausted (at which time Tenant shall be fully responsible for the cost of any further alterations). Provided no Event of Default then exists under the Lease, the Granted Allowance (or portions thereof) shall be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices for work related to alterations performed by Tenant in the Suite WB100 Premises and Suite WB200 Premises, accompanied by waivers of liens executed by all contractors employed by Tenant for the performance of such work. If the cost of Tenant's alterations in the Suite WB100 Premises or the Suite WB200 Premises exceeds the amount of the Suite WB100 Granted Allowance or the Suite WB200 Granted Allowance, the excess shall be paid by Tenant after the Suite WB100 Granted Allowance or the Suite WB200 Granted Allowance is fully exhausted. Any portion of the (i) Suite WB100 Granted Allowance that has not been applied (or contracted to be applied) in the manner set forth above by the date which is twelve (12) months following the Suite WB100 Premises Seventh Amendment Commencement Date shall revert to Landlord, and Tenant shall have no further rights with respect thereto and (ii) Suite WB200 Granted Allowance that has not been applied (or contracted to be applied) in the manner set forth above by

the date which is twelve (12) months following the Suite WB200 Premises Seventh Amendment Commencement Date shall revert to Landlord, and Tenant shall have no further rights with respect thereto.

5. *Security Deposit*. Concurrently with its execution of this Amendment, Tenant shall deliver the sum of $28,434.18 to Landlord as an additional portion of the Security Deposit, and accordingly the Security Deposit shall be increased by $28,434.18, which shall be held by Landlord throughout the Term pursuant to the provisions of Section 9 of the Lease.

6. *Brokers*. Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBRERaleigh, LLC (the "Landlord's Broker") and Cushman & Wakefield (the "Tenant's Broker", together with Landlord's Broker, collectively, "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Landlord's Broker, pursuant to a separate written agreement. Landlord's Broker shall pay any commission or fee due to Tenant's Broker, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

7. *Contingency*. This Amendment and all provisions contained herein are contingent upon (i) an executed amended and restated lease termination agreement between Landlord and Hutson Law for the premises that Hutson Law leases from Landlord (the "Amended and Restated Hutson Law Lease Termination Agreement") and (ii) an executed amended and restated lease termination agreement between Landlord and Chapter 13 for the premises that Chapter 13 leases from Landlord (the "Amended and Restated Chapter 13 Lease Termination Agreement", together with the Amended and Restated Hutson Law Lease Termination Agreement, collectively, the "Amended and Restated Lease Termination Agreement"), providing that the Suite WB100 Premises and the Suite WB200 Premises shall be surrendered to Landlord on or before February 28, 2019 or April 30, 2019, respectively, in accordance with the Amended and Restated Lease Termination Agreement. In the event Landlord does not obtain the Amended and Restated Lease Termination Agreement by February 28, 2019, Landlord or Tenant shall thereafter have the right to terminate this Amendment (prior to date of receipt of a fully executed Amended and Restated Lease Termination Agreement).

8. *Notices*. The Landlord notice information and payment information in Section 29(b) of the Lease is hereby deleted in its entirety and replaced with the following:

For Notice Information:

Landlord: VC Owner, LLC
c/o Trinity Capital Advisors
440 S. Church Street, Suite 800
Charlotte, NC 28202
Attn: Asset Manager

With a copy to: Longleaf Law Partners
2235 Gateway Access Point, Suite 201
Raleigh, NC 27607
Attnention: L. Penn Clarke

For Payment Information:

Landlord: VC Owner, LLC
c/o TP Triangle
3020 Carrington Mill Blvd., Suite 425
Morrisville, NC 27560

9. *Acknowledgement*. Landlord and Tenant acknowledge that, to their actual knowledge, each party has complied with all of its obligations under the Lease to date, and, to the extent not expressly modified hereby, all of the terms and conditions of said Lease shall remain unchanged and in full force and effect.

10. *Seventh Amendment*. This Amendment amends, restates, supersedes and replaces that certain Seventh Amendment in its entirety.

11. *Dibrell Expansion Premises Clarification*. Sections 6 and 7 of the Fifth Amendment are clarified as follows: (i) the Dibrell Expansion Date is agreed to be June 1, 2018; (ii) Base Rent for the Dibrell Expansion Premises, from 1/1/2019 through 3/31/2020 shall be as follows:

1/1/2019 – 1/31/2019:	$3,708.62 (21% abatement)
2/1/2019 – 3/31/2019:	$4,694.45 per month
4/1/2019 – 3/31/2020:	$4,822.61 per month.

Beginning 4/1/2020, Base Rent for the Dibrell Expansion Premises shall follow the existing table in Section 7 of the Fifth Amendment.

12. *Miscellaneous*. The foregoing is intended to be an addition and a modification to the Lease. Except as modified and amended by this Amendment, the Lease shall remain in full force and effect. If anything contained in this Amendment conflicts with any terms of the Lease, then the terms of this Amendment shall govern and any conflicting terms in the Lease shall be deemed deleted in their entirety. Each party to this Amendment shall execute all instruments and documents and take such further action as may be reasonably required to effectuate the purposes of this Amendment. This Amendment may be modified only by a writing executed by the parties hereto. This Amendment may be executed in multiple counterparts, each of which shall be deemed an original, and all such counterparts shall together constitute one and the same instrument. The invalidity of any portion of this Amendment shall not have any effect on the balance hereof. This Amendment shall be binding upon the parties hereto, as well as their successors, heirs, executors and assigns. This Amendment shall be governed by, and construed in accordance with North Carolina law.

[Remainder of this page intentionally left blank]

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Amendment as of the day and year first above written.

LANDLORD:

VC OWNER, LLC

By: /s/ Jeffrey B. Sheehan
Name: Jeffrey B. Sheehan
Title: Partner

TENANT:

PRECISION BIOSCIENCES, INC.

By: /s/ Matt Kane
Name: Matt Kane
Title: CEO

EXHIBIT A-1

FLOOR PLAN OF SUITE WB100 PREMISES

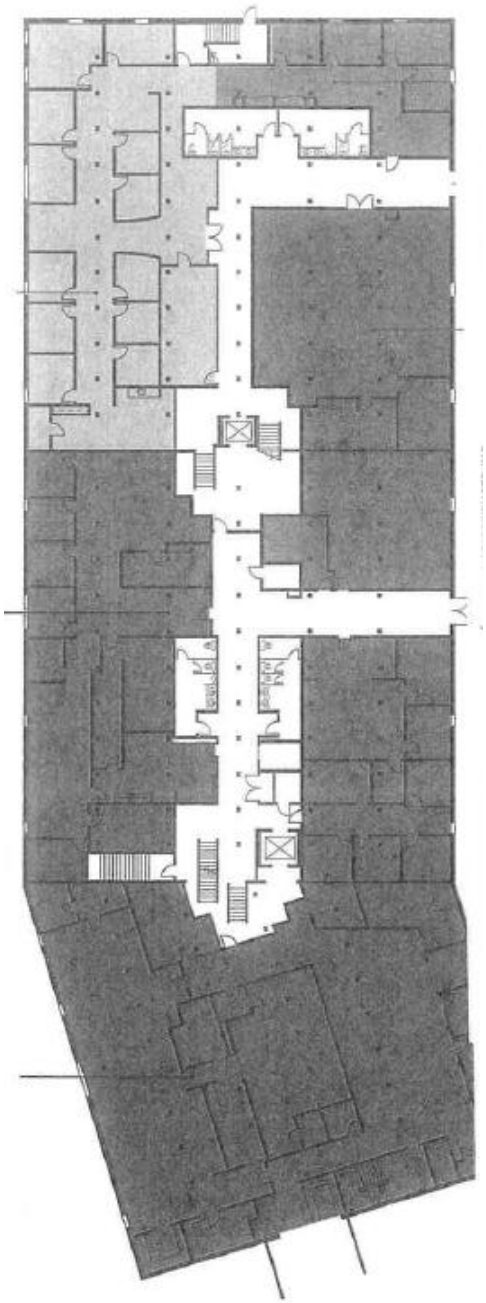
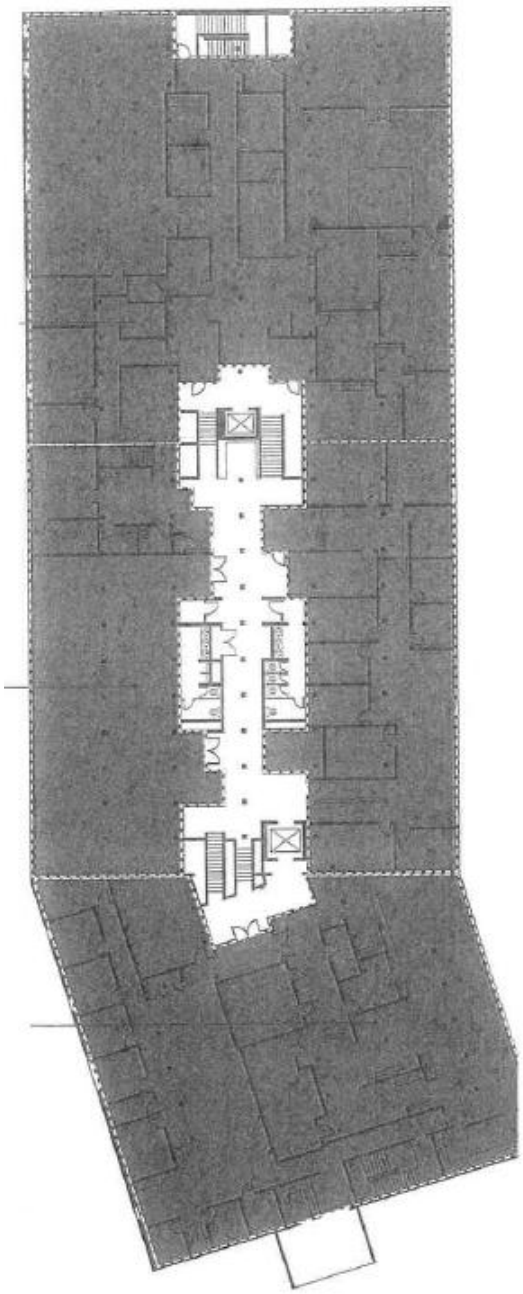


EXHIBIT A-2

FLOOR PLAN OF SUITE WB200 PREMISES



EIGHTH AMENDMENT TO LEASE AGREEMENT

THIS **EIGHTH AMENDMENT TO LEASE AGREEMENT** (this "Amendment") is made as of the 03 day of March, 2020 (the "Effective Date") by and between **VC OWNER, LLC**, a Delaware limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

D. Pursuant to that certain Lease Agreement dated April 5, 2010, as modified by a First Amendment to Lease Agreement dated August 19, 2011, and by a Second Amendment to Lease Agreement dated July 13, 2015, and by a Third Amendment to Lease Agreement dated January 12, 2016, and by a Fourth Amendment to Lease Agreement dated September 30, 2016 (the "Fourth Amendment"), and by a Fifth Amendment to Lease Agreement dated January 24, 2018, and by a Sixth Amendment to Lease Agreement dated August 6, 2018, and by a Seventh Amendment to Lease Agreement dated November 14, 2018, and an Amended and Restated Seventh Amendment to Lease Agreement dated February __, 2019 (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC) leases to Tenant certain office space in the group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as "Venable Center" (the "Project"), as more particularly described in the Lease;

E. All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

13.*Premises*. Subject to Section 6 of this Amendment, Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, approximately 1,164 rentable square feet of space known as Suite 110 (the "Suite 110 Premises") in the Prizery Building (the "Building") located within the Project, as outlined on Exhibit A attached hereto and incorporated herein. The Term of the Lease with respect to the Suite 110 Premises shall commence as of April 1, 2020 (the "Eighth Amendment Commencement Date") and shall be coterminous with the Term applicable to the remainder of the Premises. From and after the Eighth Amendment Commencement Date, Suite 110 Premises shall constitute a portion of the "Premises" for all purposes under the Lease. Landlord shall have no liability to Tenant in the event Landlord is unable to deliver possession of the Suite 110 Premises to Tenant on the Eighth Amendment Commencement Date due to the holding over by the prior tenant thereof or due to any other matter beyond Landlord's reasonable control (and further provided that Landlord shall use commercially reasonable efforts to enforce its rights under the existing lease agreement as modified by the Lease Termination Agreement, as hereinafter defined); however, in such event, Base Rent with respect to the Suite 110 Premises will not begin to accrue until the first business day after Landlord is able to deliver possession of the Suite 110 Premises, broom clean and free of any prior tenancy.

The Suite 110 Premises was a "must-take" expansion premises as set forth in Section 14 of the Fourth Amendment. Provided, however, and for purposes of clarity, due to the early termination of Weinstein's (as hereinafter defined) occupancy of the Suite 110 Premises in order to facilitate Tenant's own leasing of the Suite 110 Premises, the parties acknowledge and agree that the "must-take provisions" of Section 14 of the Fourth Amendment shall not be applicable to Tenant's leasing of the Suite 110 Premises, and instead, the terms and conditions of this Eighth Amendment shall govern.

14.*Rent*.

(a) *Suite 110 Premises*. From and after the Eighth Amendment Commencement Date, Tenant shall pay Base Rent with respect to the Suite 110 Premises only in accordance with the following rent table:

Period	*Rate*	*Annual Base Rent*	*Monthly Base Rent*
EACD* – January 31, 2021	$32.50	N/A	$3,152.50
February 1, 2021 – January 31, 2022	$33.48	$38,970.72	$3,247.56
February 1, 2022 – January 31, 2023	$34.48	$40,134.72	$3,344.56
February 1, 2023 – January 31, 2024	$35.51	$41,333.64	$3,444.47
February 1, 2024 – July 31, 2024	$36.58	N/A	$3,548.26

* Eighth Amendment Commencement Date.

(b) As a part of Tenant's willingness to incentivize Weinstein's early termination of the Suite 110 Premises in order to facilitate Tenant's own leasing of the Suite 110 Premises, Tenant has agreed to pay a portion of the rent payments owed by Weinstein to Landlord for the Suite 110 Premises. Notwithstanding anything in the Lease to the contrary, Landlord and Tenant hereby acknowledge and agree that Tenant shall make the following payment for the Premises to Landlord on or before the following date: $19,000.00 on the date that is ten (10) days following the Effective Date.

15. *Additional Rent*. Commencing on the Eighth Amendment Commencement Date, Tenant shall pay Additional Rent with respect to the Suite 110 Premises pursuant to Section 6 of the Lease. With respect to the Suite 110 Premises (only), Tenant's Proportionate Share shall be (i) 5.59% which is the ratio of 1,164 (the rentable square footage of the Suite 110 Premises) to 20,814 (the rentable square footage of the Building, and (ii) 1.33%, which is the ratio of 1,164 (the rentable square footage of the Suite 110 Premises) to 87,416 (the rentable square footage of the Project) for the Project. Notwithstanding anything in the Lease to the contrary, with respect to the Suite 110 Premises only, the Base Rent is a modified "full-service" rental rate, and commencing on January 1, 2021, Tenant shall pay its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2020.

16. *Tenant Improvements*. Subject to this Section 4, Tenant shall accept the Suite 110 Premises in its "as is" condition (subject to Landlord's continuing repair and maintenance obligations, as outlined in Section 10 of the Lease (as may be amended)), and Landlord shall have no obligation to make any alterations or improvements thereto whatsoever (provided that Landlord shall deliver same in good and tenantable condition, broom clean, with all systems serving same in good working order). Any alterations that Tenant desires to make in the Suite 110 Premises shall be subject to all the terms and conditions set forth in Section 11 of the Lease. Notwithstanding anything in the Lease to the contrary, Landlord hereby agrees to grant Tenant an allowance in the amount of $10,000 to be applied toward the cost (including architectural and engineering fees) of alterations performed by Tenant in the Suite 110 Premises (the "Granted Allowance") in conjunction with Tenant's initial occupancy of Suite 110 Premises.

Provided no Event of Default then exists under the Lease, the Granted Allowance (or portions thereof) shall be disbursed to Tenant within thirty (30) days following Tenant's submission to Landlord of paid invoices for work related to alterations performed by Tenant in the Suite 110 Premises, accompanied by waivers of liens executed by all contractors employed by Tenant for the performance of such work. If the cost of Tenant's alterations in the Suite 110 Premises exceeds the amount of the Granted Allowance, the excess shall be paid by Tenant after the Granted Allowance is fully exhausted. Any portion of the

Granted Allowance that has not been applied (or contracted to be applied) in the manner set forth above by the date which is twelve (12) months following the Eighth Amendment Commencement Date shall revert to Landlord, and Tenant shall have no further rights with respect thereto.

17. *Brokers*. Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBERaleigh, LLC (the "Landlord's Broker") and Cushman & Wakefield (the "Tenant's Broker", together with Landlord's Broker, collectively, "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Landlord's Broker, pursuant to a separate written agreement. Landlord's Broker shall pay any commission or fee due to Tenant's Broker, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

18. *Contingency*. This Amendment and all provisions contained herein are contingent upon an executed lease termination agreement between Landlord and Weinstein Friedlein Architects, P.A. ("Weinstein") for the Suite 110 Premises (the "Lease Termination Agreement"), providing that the Suite 110 Premises shall be surrendered to Landlord on or before March 31, 2020, in accordance with the Lease Termination Agreement. In the event Landlord does not obtain the Lease Termination Agreement by March 31, 2020, Landlord or Tenant shall thereafter have the right to terminate this Amendment (prior to date of receipt of a fully executed Lease Termination Agreement).

19. *Parking*. The parties acknowledge and agree that Landlord (or an affiliate of Landlord) is constructing an office building on a nearby and/or adjacent parcel. Notwithstanding anything in the Lease to the contrary, during the period of time in which Landlord is constructing said office building, (i) Tenant shall not be able to use the parking lot in front of the Building as shown on Exhibit B and (ii) Landlord shall provide Tenant with off-site parking and transportation to and from said off-site parking area to and from the Building.

20. *Acknowledgement*. Landlord and Tenant acknowledge that, to their actual knowledge, each party has complied with all of its obligations under the Lease to date, and, to the extent not expressly modified hereby, all of the terms and conditions of said Lease shall remain unchanged and in full force and effect.

21. *Miscellaneous*. The foregoing is intended to be an addition and a modification to the Lease. Except as modified and amended by this Amendment, the Lease shall remain in full force and effect. If anything contained in this Amendment conflicts with any terms of the Lease, then the terms of this Amendment shall govern and any conflicting terms in the Lease shall be deemed deleted in their entirety. Each party to this Amendment shall execute all instruments and documents and take such further action as may be reasonably required to effectuate the purposes of this Amendment. This Amendment may be modified only by a writing executed by the parties hereto. This Amendment may be executed in multiple counterparts, each of which shall be deemed an original, and all such counterparts shall together constitute one and the same instrument. The invalidity of any portion of this Amendment shall not have any effect on the balance hereof. This Amendment shall be binding upon the parties hereto, as well as their successors, heirs, executors and assigns. This Amendment shall be governed by, and construed in accordance with North Carolina law.

[Remainder of this page intentionally left blank]

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Amendment as of the day and year first above written.

LANDLORD:

VC OWNER, LLC

By: /s/ Jeff Sheehan_ _
Name: _Jeff Sheehan_
Title: _Authorized Signator_

TENANT:

PRECISION BIOSCIENCES, INC.

By: _/s/ Sinu Bhandaru_
Name: Sinu Bhandaru
Title: Vice-President Operations & IT
03March2020

EXHIBIT A

FLOOR PLAN OF SUITE 110 PREMISES

EXHIBIT B

PARKING LOT

NINTH AMENDMENT TO LEASE AGREEMENT

THIS **NINTH AMENDMENT TO LEASE AGREEMENT** (this "Amendment") is made as of the 31st day of August, 2020 (the "Effective Date") by and between **VENABLE HISTORIC, LLC**, a Delaware limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

A. Pursuant to that certain Lease Agreement dated April 5, 2010 (the "Original Lease"), as modified by a First Amendment to Lease Agreement dated August 19, 2011, and by a Second Amendment to Lease Agreement dated July 13, 2015, and by a Third Amendment to Lease Agreement dated January 12, 2016, and by a Fourth Amendment to Lease Agreement dated September 30, 2016 (the "Fourth Amendment"), and by a Fifth Amendment to Lease Agreement dated January 24, 2018, and by a Sixth Amendment to Lease Agreement dated August 6, 2018, and by a Seventh Amendment to Lease Agreement dated November 14, 2018, an Amended and Restated Seventh Amendment to Lease Agreement dated February ___, 2019, and an Eighth Amendment to Lease Agreement dated March 3, 2020 (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC, and VC Owner, LLC) leases to Tenant certain office space in the group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as "Venable Center" (the "Project"), as more particularly described in the Lease;

B. All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

1. *Premises*. Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, approximately 330 rentable square feet of space known as Suite 100 (the "Suite 100 Premises") in the Prizery Building (the "Building") located within the Project, as outlined on Exhibit A attached hereto and incorporated herein. The Term of the Lease with respect to the Suite 100 Premises shall commence as of September 1, 2020 (the "Ninth Amendment Commencement Date") and shall be coterminous with the Term applicable to the remainder of the Premises. From and after the Ninth Amendment Commencement Date, the Suite 100 Premises shall constitute a portion of the "Premises" for all purposes under the Lease. Landlord shall have no liability to Tenant in the event Landlord is unable to deliver possession of the Suite 100 Premises to Tenant on the Ninth Amendment Commencement Date due to the holding over by the prior tenant thereof or due to any other matter beyond Landlord's reasonable control (and further provided that Landlord shall use commercially reasonable efforts to enforce its rights under the existing lease agreement for the tenant currently occupying the Suite 100 Premises); however, in the event Landlord is unable to deliver possession of the Suite 100 Premises on or before the Suite 100 Rent Commencement Date (defined below), Base Rent with respect to the Suite 100 Premises will not begin to accrue until the first business day after Landlord is able to deliver possession of the Suite 100 Premises, broom clean and free of any prior tenancy.

2. *Base Rent for Suite 100 Premises*. From and after October 1, 2020, (the "Suite 100 Rent Commencement Date"), Tenant shall pay Base Rent with respect to the Suite 100 Premises only in accordance with the following rent table:

Period	Rate	Annual Base Rent	Monthly Base Rent
Suite 100 RCD* – January 31, 2021	$32.50	*N/A*	$893.75
February 1, 2021 – January 31, 2022	$33.48	$11,048.40	$920.70
February 1, 2022 – January 31, 2023	$34.48	$11,378.40	$948.20
February 1, 2023 – January 31, 2024	$35.51	$11,718.36	$976.53
February 1, 2024 – July 31, 2024	$36.58	*N/A*	$1,005.95

* Suite 100 Rent Commencement Date.

3. *Additional Rent*. Commencing on the Suite 100 Rent Commencement Date, Tenant shall pay Additional Rent with respect to the Suite 100 Premises pursuant to Section 6 of the Original Lease. With respect to the Suite 100 Premises (only), Tenant's Proportionate Share shall be (i) 1.59%, which is the ratio of 330 (the rentable square footage of the Suite 100 Premises) to 20,814 (the rentable square footage of the Building), and (ii) 0.38%, which is the ratio of 330 (the rentable square footage of the Suite 100 Premises) to 87,416 (the rentable square footage of the Project) for the Project. Notwithstanding anything in the Lease to the contrary, with respect to the Suite 100 Premises only, the Base Rent is a modified "full-service" rental rate, and commencing on January 1, 2021, Tenant shall pay its Proportionate Share of increases in Operating Expenses over the Operating Expenses incurred in calendar year 2020.

4. *Tenant Improvements*. Subject to this Section 4, Tenant shall accept the Suite 100 Premises in its "as is" condition (subject to Landlord's continuing repair and maintenance obligations, as outlined in Section 10 of the Original Lease (as may be amended)), and Landlord shall have no obligation to make any alterations or improvements thereto whatsoever (provided that Landlord shall deliver same in good and tenantable condition, broom clean, with all systems serving same in good working order). Any alterations that Tenant desires to make in the Suite 100 Premises shall be subject to all the terms and conditions set forth in Section 11 of the Original Lease.

5. *Brokers*. Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBRERaleigh, LLC (the "Landlord's Broker") and Cushman & Wakefield (the "Tenant's Broker", together with Landlord's Broker, collectively, "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Landlord's Broker, pursuant to a separate written agreement. Landlord's Broker shall pay any commission or fee due to Tenant's Broker, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

6. *Notices*. The Landlord notice information and payment information in Section 29(b) of the Original Lease, as amended by Section 8 of the Amended and Restated Seventh Amendment to Lease Agreement is hereby deleted in its entirety, and replaced with the addresses set forth on Exhibit B, attached hereto and incorporated by reference.

7. *Acknowledgement*. Landlord and Tenant acknowledge that, to their actual knowledge, each party has complied with all of its obligations under the Lease to date, and, to the extent not expressly modified hereby, all of the terms and conditions of said Lease shall remain unchanged and in full force and effect.

8. *Miscellaneous*. The foregoing is intended to be an addition and a modification to the Lease.

Except as modified and amended by this Amendment, the Lease shall remain in full force and effect. If anything contained in this Amendment conflicts with any terms of the Lease, then the terms of this Amendment shall govern and any conflicting terms in the Lease shall be deemed deleted in their entirety. Each party to this Amendment shall execute all instruments and documents and take such further action as may be reasonably required to effectuate the purposes of this Amendment. This Amendment may be modified only by a writing executed by the parties hereto. This Amendment may be executed in multiple counterparts, each of which shall be deemed an original, and all such counterparts shall together constitute one and the same instrument. The invalidity of any portion of this Amendment shall not have any effect on the balance hereof. This Amendment shall be binding upon the parties hereto, as well as their successors, heirs, executors and assigns. This Amendment shall be governed by, and construed in accordance with North Carolina law.

[Remainder of this page intentionally left blank]

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Amendment as of the day and year first above written.

LANDLORD:

VC HISTORIC, LLC
a Delaware limited liability company

By: /s/ Jeff Sheehan
Name: Jeff Sheehan
Title: Manager

TENANT:

PRECISION BIOSCIENCES, INC.
a Delaware corporation

By: /s/ Sinu Bhandaru
Name: Sinu Bhandaru
Title: Vice-President Operations & IT

EXHIBIT A

FLOOR PLAN OF SUITE 100 PREMISES

EXHIBIT B

LANDLORD NOTICE AND PAYMENT ADDRESSES

For Notice Information

Landlord: Venable Historic, LLC
c/o Jordan Park Group LLC
100 Pine Street, Suite 2600
San Francisco, CA 94111
Attention: Legal and Compliance
Email: legalcompliance@jordanpark.com

And to: c/o Trinity Capital Advisors, LLC
440 South Church Street, Suite 800
Charlotte, NC 28202
Attn: Jeff Sheehan
Email: jsheehan@trinitycapitaladvisors.com

And to: c/o SLI Capital, LLC
424 Six Forks Rd, Suite 820
Raleigh, NC 27609
Attn: Bryan Kane
Email: bmk@slicap.com

With copy to: Sidley Austin LLP
484 Seventh Avenue
New York, NY 10019
Attn: Steven C. Koppel
Email: skoppel@sidley.com

With copy to: Troutman Pepper Hamilton Sanders LLP
301 South College Street, Suite 3400
Charlotte, NC 28202
Attn: Patrick L. Ridinger
Email: patrick.ridinger@troutman.com

For Payment Information:

Landlord: Venable Historic, LLC
c/o TP Triangle, LLC
3020 Carrington Mill Blvd, Suite 425
Morrisville, NC 27560

For ACH payments:
JPMorgan Chase Bank, N.A.
383 Madison Avenue
New York, New York 10017
ABA # - 021000021
Account Number – 758985498
For Account of - VENABLE HISTORIC, LLC

TENTH AMENDMENT TO LEASE AGREEMENT

THIS **TENTH AMENDMENT TO LEASE AGREEMENT** (this "Tenth Amendment") is made as of the 16th day of October, 2023 (the "Effective Date") by and between **VENABLE HISTORIC, LLC**, a Delaware limited liability company ("Landlord"), and **PRECISION BIOSCIENCES, INC.**, a Delaware corporation ("Tenant"), with respect to the following recitals:

F. Pursuant to that certain Lease Agreement dated April 5, 2010 (the "Original Lease"), as modified by a First Amendment to Lease Agreement dated August 19, 2011, and by a Second Amendment to Lease Agreement dated July 13, 2015, a Third Amendment to Lease Agreement dated January 12, 2016, a Fourth Amendment to Lease Agreement dated September 30, 2016 (the "Fourth Amendment"), a Fifth Amendment to Lease Agreement dated January 24, 2018 (the "Fifth Amendment"), a Sixth Amendment to Lease Agreement dated August 6, 2018 (the "Sixth Amendment"), an Amended and Restated Seventh Amendment to Lease Agreement dated February, 2019 (the "A&R Seventh Amendment"), an Eighth Amendment to Lease Agreement dated March 3, 2020 (the "Eighth Amendment"), and a Ninth Amendment to Lease Agreement dated August 31, 2020 (the "Ninth Amendment") (collectively, the "Lease"), Landlord (as successor to Venable Tenant LLC, and VC Owner, LLC) leases to Tenant certain office space in the group of interconnected buildings situated at 302 East Pettigrew Street, Durham, North Carolina known collectively as "Venable Center" (the "Project"), as more particularly described in the Lease;

G. Specifically, Landlord leases a total of 71,305 rentable square feet (the "Premises") to Tenant at the Project in the Dibrell Building, the Prizery Building, and the Receiving Room, and the total Premises is comprised of multiple and separate spaces at the Project, as set forth in the Lease, as follows:

a. The "Current DA Premises" (as defined in the Fourth Amendment) containing approximately 16,701 rentable square feet in the Dibrell Building, which Current DA Premises includes (i) 8,274 rentable square feet in Suite A-100, and (ii) 8,427 rentable square feet in Suite B-100,

b. The "Current RR Premises" (as defined in the Fourth Amendment) containing 2,863 rentable square feet in Suite RR 30 of the Receiving Room;

c. The "RR Expansion Premises" (as defined in the Fourth Amendment) containing approximately 11,621 rentable square feet in Suite RR 20 of the Receiving Room;

d. The "PR Second Floor Expansion Premises" (as defined in the Fourth Amendment) containing approximately 7,494 rentable square feet in Suite 200 on the second floor of the Prizery Building;

e. The "PR First Floor Expansion Premises A" (as defined in the Fourth Amendment), containing approximately 3,162 rentable square feet in Suites 130 and 140 of the Prizery Building;

f. The "Suite 120 Premises" (which is a portion of the PR First Floor Expansion Premises B, set forth and as defined in the Fourth Amendment) containing approximately 1,558 rentable square feet in Suite 120 of the Prizery Building

g. The "Third Floor Expansion Premises" (as defined in the Fifth Amendment) being a total of approximately 7,106 rentable square feet in Suite 300 (6,358 rsf), Suite 330 (546 rsf), and Suite 340 (202 rsf) of the Prizery Building;

h. The "Dibrell Expansion Premises" (as defined in the Fifth Amendment) containing approximately 2,848 rentable square feet in Suite C180 of the Dibrell Building;

i. The "Suite C-185 Premises" (as defined in the Sixth Amendment), being approximately 1,626 rentable square feet in Suite C-185 of the Dibrell Building

j. The "Suite WB100 Premises" (as defined in the A&R Seventh Amendment) being approximately 7,416 rentable square feet in Suite WB100 on the first floor of the Dibrell Building (the Suite WB100 Premises is the same space and premises that is defined as the DB First Floor Expansion Premises in the Fourth Amendment);

k. The "Suite WB200 Premises" (as defined in the A&R Seventh Amendment) being approximately 7,416 rentable square feet in Suite WB200 on the second floor of the Dibrell Building (the Suite WB200 Premises is the same space and premises that is defined as the DB Second Floor Expansion Premises in the Fourth Amendment);

l. The "Suite 110 Premises" (as defined in the Eighth Amendment), being approximately 1,164 rentable square feet in Suite 110 of the Prizery Building;

m. The "Suite 100 Premises" (as defined in the Ninth Amendment) being approximately 330 rentable square feet in Suite 100 of the Prizery Building;

(subsections (a) through (m) above collectively comprise the Premises, as defined in the Lease).

H. Tenant has exercised its Option to Extend the Lease, as set forth in the Second Amendment and referred to in the Fourth Amendment, and Landlord and Tenant desire to memorialize Tenant's extension of the Term of the Lease; and

I. All capitalized terms used in this Amendment that are not otherwise defined herein shall have the meanings ascribed to such terms in the Lease.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant agree as follows:

22.*Term*. The Term of the Lease is extended for a period of five (5) years, commencing

upon August 1, 2024 (the "Renewal Date") and up to and through July 31, 2029 (the "Expiration Date").

23. *Base Rent*. Landlord and Tenant acknowledge that there are multiple and different Base Rent rates for different portions of the Premises, but that some portions of the Premises have the same Base Rent rate. Accordingly, and in order to set forth a more concise Base Rent schedule for the different portions of the Premises, as of and following the Renewal Date Tenant shall Base Rent for the respective portions of the Premises based upon the schedules and tables set forth below.

a. For the following portions of the Premises only, being (a) the Current RR Premises (2,863 rsf), and (b) the Current DA Premises (16,701 rsf) which have the same rental rate under the Lease and which have a combined total 19,564 rentable square feet at the Project, the Base Rent shall be as follows:

Period	Rate	Annual Base Rent	Monthly Base Rent
August 1, 2024 – July 31, 2025	$23.92	$467,970.88	$38,997.57
August 1, 2025 – July 31, 2026	$24.58	$480,883.12	$40,073.59
August 1, 2026 – July 31, 2027	$25.25	$493,991.00	$41,165.92
August 1, 2027 – July 31, 2028	$25.95	$507,685.80	$42,307.15
August 1, 2028 – July 31, 2029	$26.66	$521,576.24	$43,464.69

b. For the following portions of the Premises only, being (a) the RR Expansion Premises (11,621 rsf), (b) the Dibrell Expansion Premises (2,848 rsf), and (c) the WB 100 Premises (7,416 rsf), all of which have the same rental rate under the Lease and which have a combined total 21,885 rentable square feet at the Project, the Base Rent shall be as follows:

Period	Rate	Annual Base Rent	Monthly Base Rent
August 1, 2024 – July 31, 2025	$23.98	$524,802.30	$43,733.53
August 1, 2025 – July 31, 2026	$24.70	$540,559.50	$45,046.63
August 1, 2026 – July 31, 2027	$25.44	$556,754.40	$46,396.20
August 1, 2027 – July 31, 2028	$26.20	$573,387.00	$47,782.25
August 1, 2028 – July 31, 2029	$26.99	$590,676.15	$49,223.01

c. For the following portions of the Premises only, being (a) the PR Second Floor Expansion Premises (7,494 rsf), (b) the Third Floor Expansion Premises (7,106 rsf), (c) the Suite WB 200 Premises (7,416 rsf), (d) the PR First Floor Expansion Premises A (3,162 rsf), and (e) the Suite 120 Premises (1,558 rsf), all of which have

the same rental rate under the Lease and which have a combined total of 26,736 rentable square feet at the Project, the Base Rent shall be as follows:

Period	Rate	Annual Base Rent	Monthly Base Rent
August 1, 2024 – July 31, 2025	$31.14	$832,559.04	$69,379.92
August 1, 2025 – July 31, 2026	$32.07	$857,423.52	$71,451.96
August 1, 2026 – July 31, 2027	$33.03	$883,090.08	$73,590.84
August 1, 2027 – July 31, 2028	$34.02	$909,558.72	$75,796.56
August 1, 2028 – July 31, 2029	$35.04	$936,829.44	$78,069.12

d. For only the Suite C-185 Premises, with 1,626 rentable square feet, the Base Rent shall be as follows:

Period	Rate	Annual Base Rent	Monthly Base Rent
August 1, 2024 – July 31, 2025	$34.63	$56,308.38	$4,692.37
August 1, 2025 – July 31, 2026	$35.67	$57,999.42	$4,833.29
August 1, 2026 – July 31, 2027	$36.74	$59,739.24	$4,978.27
August 1, 2027 – July 31, 2028	$37.84	$61,527.84	$5,127.32
August 1, 2028 – July 31, 2029	$38.97	$63,365.22	$5,280.44

e. For the following portions of the Premises only, being, (a) the Suite 100 Premises (330 rsf), and (b) the Suite 110 Premises (1,164 rsf), which have the same rental rate under the Lease and which have a combined total of 1,494 rentable square feet at the Project, the Base Rent shall be as follows:

Period	Rate	Annual Base Rent	Monthly Base Rent
August 1, 2024 – July 31, 2025	$37.68	$56,293.92	$4,692.37
August 1, 2025 – July 31, 2026	$38.81	$57,982.14	$4,833.29
August 1, 2026 – July 31, 2027	$39.97	$59,715.18	$4,978.27
August 1, 2027 – July 31, 2028	$41.17	$61,507.98	$5,127.32
August 1, 2028 – July 31, 2029	$42.41	$63,360.54	$5,280.44

24. *Additional Rent*. Tenant shall continue to pay Additional Rent for each respective portion of the Premises as previously set forth in the Lease, and nothing in this Tenth Amendment shall be construed to amend or alter in any way Tenant's payments of Additional Rent for Operating Expenses, the Proportionate Share for each respective portion of the Premises, or Tenant's method or types of payment of Additional Rent for Operating Expenses for each

respective portion of the Premises.

25.*Brokers*. Landlord and Tenant each warrant to the other that in connection with this Amendment neither has employed or dealt with any broker, agent or finder, other than CBRERaleigh, LLC (the "Landlord's Broker") and Cushman & Wakefield (the "Tenant's Broker", together with Landlord's Broker, collectively, "Brokers"). Landlord acknowledges that it shall pay any commission or fee due to the Landlord's Broker, pursuant to a separate written agreement. Landlord's Broker shall pay any commission or fee due to Tenant's Broker, pursuant to a separate written agreement. Each party shall indemnify and hold the other harmless from and against any claim for brokerage or other commissions asserted by any broker, agent or finder employed by the indemnifying party or with whom the indemnifying party has dealt, other than the Brokers.

26.*Acknowledgement*. Landlord and Tenant acknowledge that, to their actual knowledge, each party has complied with all of its obligations under the Lease to date, and, to the extent not expressly modified hereby, all of the terms and conditions of said Lease shall remain unchanged and in full force and effect.

27.*Miscellaneous*. The foregoing is intended to be an addition and a modification to the Lease. Except as modified and amended by this Tenth Amendment, the Lease shall remain in full force and effect. If anything contained in this Tenth Amendment conflicts with any terms of the Lease, then the terms of this Tenth Amendment shall govern and any conflicting terms in the Lease shall be deemed deleted in their entirety. Each party to this Tenth Amendment shall execute all instruments and documents and take such further action as may be reasonably required to effectuate the purposes of this Tenth Amendment. This Amendment may be modified only by a writing executed by the parties hereto. This Tenth Amendment may be executed in multiple counterparts, each of which shall be deemed an original, and all such counterparts shall together constitute one and the same instrument. The invalidity of any portion of this Amendment shall not have any effect on the balance hereof. This Tenth Amendment shall be binding upon the parties hereto, as well as their successors, heirs, executors and assigns. This Tenth Amendment shall be governed by, and construed in accordance with North Carolina law.

[Remainder of this page intentionally left blank]

IN WITNESS WHEREOF, Landlord and Tenant have executed and delivered this Tenth Amendment as of the day and year first above written.

LANDLORD:

VC HISTORIC, LLC
a Delaware limited liability company

By: /s/ Bryan Kane
Name: Bryan Kane
Title: Authorized Signatory

TENANT:

PRECISION BIOSCIENCES, INC.
a Delaware corporation

By: /s/ Sinu Bhandaru
Name: Sinu Bhandaru
Title: VP Operations & IT

Exhibit 21.1

Subsidiaries

Precision BioSciences, Inc. has no subsidiaries.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-230671, 333-259369, and 333-267079 on Form S-8 and Registration Statement No. 333-272540 on Form S-3 of our report dated March 27, 2024, relating to the financial statements of Precision BioSciences, Inc., appearing in this Annual Report on Form 10-K for the year ended December 31, 2023.

/s/ Deloitte & Touche LLP

Raleigh, North Carolina
March 27, 2024

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Michael Amoroso, certify that:

1. I have reviewed this Annual Report on Form 10-K for the fiscal year ended December 31, 2023 of Precision BioSciences, 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 27, 2024

By: /s/ Michael Amoroso

Michael Amoroso
President, Chief Executive Officer and Director
(principal executive officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, John Alexander Kelly, certify that:

1. I have reviewed this Annual Report on Form 10-K for the fiscal year ended December 31, 2023 of Precision BioSciences, 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 27, 2024

By: /s/ John Alexander Kelly

John Alexander Kelly
Chief Financial Officer
(principal financial and accounting officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Precision BioSciences, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 27, 2024

By: /s/ Michael Amoroso

Michael Amoroso
President, Chief Executive Officer and Director
(principal executive officer)

Exhibit 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Precision BioSciences, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 27, 2024

By: /s/ John Alexander Kelly

John Alexander Kelly
Chief Financial Officer
(principal financial and accounting officer)

Exhibit 97

PRECISION BIOSCIENCES, INC.

POLICY FOR RECOVERY OF ERRONEOUSLY AWARDED COMPENSATION

Precision BioSciences, Inc. (the "***Company***") has adopted this Policy for Recovery of Erroneously Awarded Compensation (the "***Policy***"), effective as of October 2, 2023 (the "***Effective Date***"). Capitalized terms used in this Policy but not otherwise defined herein are defined in Section 11.

1. Persons Subject to Policy

This Policy shall apply to current and former Officers. Each Officer shall be required to sign an acknowledgment agreement pursuant to which such Officer will agree to be bound by the terms of, and comply with, this Policy; however, any Officer's failure to sign any such acknowledgment agreement shall not negate the application of this Policy to the Officer.

2. Compensation Subject to Policy

This Policy shall apply to Incentive-Based Compensation received on or after the Effective Date. For purposes of this Policy, the date on which Incentive-Based Compensation is "received" shall be determined under the Applicable Rules, which generally provide that Incentive-Based Compensation is "received" in the Company's fiscal period during which the relevant Financial Reporting Measure is attained or satisfied, without regard to whether the grant, vesting or payment of the Incentive-Based Compensation occurs after the end of that period.

3. Recovery of Compensation

In the event that the Company is required to prepare a Restatement, the Company shall recover, reasonably promptly, and in accordance with Section 4 below, the portion of any Incentive-Based Compensation that is Erroneously Awarded Compensation, unless the Committee has determined that recovery from the relevant current or former Officer would be Impracticable. Recovery shall be required in accordance with the preceding sentence regardless of whether the applicable Officer engaged in misconduct or otherwise caused or contributed to the requirement for the Restatement and regardless of whether or when restated financial statements are filed by the Company. For clarity, the recovery of Erroneously Awarded Compensation under this Policy will not give rise to any Officer's right to voluntarily terminate employment for "good reason" or due to a "constructive termination" (or any similar term of like effect) under any plan, program or policy of or agreement with the Company or any of its affiliates.

4. Manner of Recovery; Limitation on Duplicative Recovery

The Committee shall, in its sole discretion, determine the manner of recovery of any Erroneously Awarded Compensation, which may include, without limitation, reduction or cancellation by the Company or an affiliate of the Company of Incentive-Based Compensation or Erroneously Awarded Compensation, reimbursement or repayment by any person subject to this Policy, and, to the extent permitted by law, an offset of the Erroneously Awarded Compensation against other compensation payable by the Company or an affiliate of the Company to such person. Notwithstanding the foregoing, unless otherwise prohibited by the Applicable Rules, to the extent this Policy provides for recovery of Erroneously Awarded Compensation already recovered by the Company pursuant to Section 304 of the Sarbanes-Oxley Act of 2002 or Other Recovery Arrangements, the amount of Erroneously Awarded Compensation already recovered by the Company from the recipient of such Erroneously Awarded Compensation may be credited to the amount of Erroneously Awarded Compensation required to be recovered pursuant to this Policy from such person.

|||

5. Administration

This Policy shall be administered, interpreted and construed by the Committee, which is authorized to make all determinations necessary, appropriate or advisable for such purpose. The Board may re-vest in itself the authority to administer, interpret and construe this Policy in accordance with applicable law, and in such event references herein to the "Committee" shall be deemed to be references to the Board. Subject to any permitted review by the applicable national securities exchange or association pursuant to the Applicable Rules, all determinations and decisions made by the Committee pursuant to the provisions of this Policy shall be final, conclusive and binding on all persons, including the Company and its affiliates, stockholders and employees. The Committee may delegate administrative duties with respect to this Policy to one or more directors or employees of the Company, as permitted under applicable law, including any Applicable Rules.

6. Interpretation

This Policy shall be interpreted and applied in a manner that is consistent with the requirements of the Applicable Rules, and to the extent this Policy is inconsistent with such Applicable Rules, it shall be deemed amended to the minimum extent necessary to ensure compliance therewith.

7. No Indemnification; No Liability

The Company shall not indemnify or insure any person against the loss of any Erroneously Awarded Compensation pursuant to this Policy, nor shall the Company directly or indirectly pay or reimburse any person for any premiums for third-party insurance policies that such person may elect to purchase to fund such person's potential obligations under this Policy. None of the Company, an affiliate of the Company or any member of the Committee or the Board shall have any liability to any person as a result of actions taken under this Policy.

8. Application; Enforceability

Except as otherwise determined by the Committee or the Board, the adoption of this Policy does not limit, and is intended to apply in addition to, any *Other Recovery Arrangements*. Subject to Section 4, the remedy specified in this Policy shall not be exclusive and shall be in addition to every other right or remedy at law or in equity that may be available to the Company or an affiliate of the Company or is otherwise required by applicable law and regulations.

9. Severability

The provisions in this Policy are intended to be applied to the fullest extent of the law; provided, however, to the extent that any provision of this Policy is found to be unenforceable or invalid under any applicable law, such provision will be applied to the maximum extent permitted, and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to any limitations required under applicable law.

10. Amendment and Termination

The Board or the Committee may amend, modify or terminate this Policy in whole or in part at any time and from time to time in its sole discretion. This Policy will terminate automatically when the Company does not have a class of securities listed on a national securities exchange or association.

11. Definitions

"***Applicable Rules***" means Section 10D of the Exchange Act, Rule 10D-1 promulgated thereunder, the listing rules of the national securities exchange or association on which the Company's securities are listed, and any applicable rules, standards or other guidance adopted by the Securities and Exchange Commission or any national securities exchange or association on which the Company's securities are listed.

"***Board***" means the Board of Directors of the Company.

"***Committee***" means the committee of the Board responsible for executive compensation decisions comprised solely of independent directors (as determined under the Applicable Rules), or in the absence of such a committee, a majority of the independent directors serving on the Board.

"***Erroneously Awarded Compensation***" means the amount of Incentive-Based Compensation received by a current or former Officer that exceeds the amount of Incentive-Based Compensation that would have been received by such current or former Officer based on a restated Financial Reporting Measure, as determined on a pre-tax basis in accordance with the Applicable Rules.

"***Exchange Act***" means the Securities Exchange Act of 1934, as amended.

"***Financial Reporting Measure***" means any measure determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, and any measures derived wholly or in part from such measures, including GAAP, IFRS and non-GAAP/IFRS financial measures, as well as stock or share price and total stockholder return.

"***GAAP***" means United States generally accepted accounting principles.

"***IFRS***" means international financial reporting standards as adopted by the International Accounting Standards Board.

"***Impracticable***" means (a) the direct expense paid to third parties to assist in enforcing recovery would exceed the Erroneously Awarded Compensation; provided that the Company has (i) made reasonable attempt(s) to recover the Erroneously Awarded Compensation, (ii) documented such reasonable attempt(s), and (iii) provided such documentation to the relevant listing exchange or association, (b) the recovery would violate the Company's home country laws adopted prior to November 28, 2022 pursuant to an opinion of home country counsel; provided that the Company has (i) obtained an opinion of home country counsel, acceptable to the relevant listing exchange or association, that recovery would result in such a violation, and (ii) provided such opinion to the relevant listing exchange or association, or (c) recovery would likely cause an otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the Company, to fail to meet the requirements of 26 U.S.C. 401(a)(13) or 26 U.S.C. 411(a) and the regulations thereunder.

"***Incentive-Based Compensation***" means, with respect to a Restatement, any compensation that is granted, earned, or vested based wholly or in part upon the attainment of one or more Financial Reporting Measures and received by a person: (a) after such person began service as an Officer; (b) who served as an Officer at any time during the performance period for that compensation; (c) while the Company has a class of securities listed on a national securities exchange or association; and (d) during the applicable Three-Year Period.

"***Officer***" means each person who the Company determines serves as a Company officer, as defined in Section 16 of the Exchange Act.

"***Other Recovery Arrangements***" means any clawback, recoupment, forfeiture or similar policies or provisions of the Company or its affiliates, including any such policies or provisions of such effect contained in any employment agreement, bonus plan, incentive plan, equity-based plan or award agreement thereunder or similar plan, program or agreement of the Company or an affiliate or required under applicable law.

"***Restatement***" means an accounting restatement to correct the Company's material noncompliance with any financial reporting requirement under securities laws, including restatements that correct an error in previously issued financial statements (a) that is material to the previously issued financial statements or (b) that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period.

"***Three-Year Period***" means, with respect to a Restatement, the three completed fiscal years immediately preceding the date that the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare such Restatement, or, if earlier, the date on which a court, regulator or other legally authorized body directs the Company to prepare such Restatement. The "Three-Year Period" also includes any transition period (that results from a change in the Company's fiscal year) within or immediately following the three completed fiscal years identified in the preceding sentence. However, a transition period between the last day of the Company's previous fiscal year end and the first day of its new fiscal year that comprises a period of nine to 12 months shall be deemed a completed fiscal year.

ACKNOWLEDGMENT AND CONSENT TO
POLICY FOR RECOVERY OF ERRONEOUSLY AWARDED COMPENSATION

The undersigned has received a copy of the Policy for Recovery of Erroneously Awarded Compensation (the "Policy") adopted by Precision BioSciences, Inc. (the "Company").

For good and valuable consideration, the receipt of which is acknowledged, the undersigned agrees to the terms of the Policy and agrees that compensation received by the undersigned may be subject to reduction, cancellation, forfeiture and/or recoupment to the extent necessary to comply with the Policy, notwithstanding any other agreement to the contrary. The undersigned further acknowledges and agrees that the undersigned is not entitled to indemnification in connection with any enforcement of the Policy and expressly waives any rights to such indemnification under the Company's organizational documents or otherwise.

_____ _____

Date Signature

_____

Name

_____

Title