

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

FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

FibroBiologics, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

2834

(Primary Standard Industrial
Classification Code Number)

86-3329066

(I.R.S. Employer
Identification Number)

**455 E. Medical Center Blvd.
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Houston, Texas 77598
(281) 671-5150**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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Approximate date of commencement of proposed sale to the public: **As soon as practicable after this registration statement becomes effective.**

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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 7(a)(2)(B) of the Securities Act.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission acting pursuant to said Section 8(a), may determine.



The information in this preliminary prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS

SUBJECT TO COMPLETION, DATED APRIL 25, 2024



FibroBiologics, Inc.

**Up to 1,801,801 Units, each consisting of
One Share of Common Stock and
One Warrant to purchase One Share of Common Stock**

Up to 1,801,801 Shares of Common Stock Underlying the Warrants

We are offering on a best efforts basis up to 1,801,801 units (the “Units”), of FibroBiologics, Inc., each Unit consisting of one share of our common stock, par value \$0.00001 per share (the “common stock”), and one warrant to purchase one share of common stock (“Warrant”). We have assumed a public offering price of \$11.10 per Unit, which was the last reported sale price of our common stock on The Nasdaq Global Market on April 23, 2024.

Our common stock is listed on The Nasdaq Global Market (“Nasdaq”) under the symbol “FBLG”. There is no established public trading market for the Warrants. We do not intend to apply for listing of the Warrants on any securities exchange or recognized trading system.

The Units have no stand-alone rights and will not be certificated or issued as stand-alone securities. The Warrants will have an exercise price of \$11.10 (100% of the public offering price per Unit) and will be exercisable for a period of five years commencing upon issuance. The shares of common stock and the Warrants included in the Units can only be purchased together in this offering, but are immediately separable and will be issued separately. The Warrants will be exercisable, at the option of the holder, in whole or in part. Each Warrant will entitle the holder thereof to purchase one share of common stock, and the Warrants are not exercisable for a fractional share. A holder of a Warrant may not exercise any portion of a Warrant to the extent that the holder, together with its affiliates and any other person or entity acting as a group, would own more than 4.99% (or, at the election of the investor, 9.99%) of our outstanding shares of common stock after exercise, as such ownership percentage is determined in accordance with the terms of the Warrants, except that upon notice from the holder to us, the holder may waive such limitation up to a percentage, not in excess of 9.99%. To better understand the terms of the Warrants, you should carefully read the “Description of Our Securities” section on page 83 of this prospectus.

Our founder and Chief Executive Officer, Pete O’Heeron, beneficially owns approximately 60% of the voting power of our outstanding voting securities, and we are a “controlled company” within the meaning of the listing rules of The Nasdaq Stock Market LLC. We do not intend to rely on any exemptions from the corporate governance requirements that are available to controlled companies.

The public offering price per Unit will be determined at the time of pricing and may be at a discount to the then current market price. The assumed public offering price used throughout this prospectus may not be indicative of the final offering price. The final public offering price will be determined through negotiation between us and investors based upon a number of factors, including our history and our prospects, the industry in which we operate, our past and present operating results, the previous experience of our executive officers and the general condition of the securities markets at the time of this offering.

The Units will be offered at a fixed price and are expected to be issued in a single closing. We expect this offering to be completed no later than two business days following the commencement of this offering. This offering will terminate on May 31, 2024, unless the offering is fully subscribed before that date or we decide to terminate the offering (which we may do at any time in our discretion) prior to that date. We will deliver all securities to be issued in connection with this offering delivery versus payment/receipt versus payment upon receipt of investor funds received by us. Accordingly, neither we nor the placement agent have made any arrangements to place investor funds in an escrow account or trust account since the placement agent will not receive investor funds in connection with the sale of the securities offered hereunder.

We have engaged Maxim Group LLC as our exclusive placement agent (“Maxim” or the “placement agent”) to use its reasonable best efforts to solicit offers to purchase our securities in this offering. The placement agent is not purchasing or selling any of the securities we are offering and is not required to arrange for the purchase or sale of any specific number or dollar amount of the securities. Because there is no minimum offering amount required as a condition to closing in this offering the actual public offering amount, placement agent’s fee, and proceeds to us, if any, are not presently determinable and may be substantially less than the total maximum offering amounts set forth above and throughout this prospectus. We have agreed to pay the placement agent the placement agent fees set forth in the table below. See “Plan of Distribution” in this prospectus for more information.

	Per Unit	Total
Public offering price	\$	\$
Placement Agent Fees ⁽¹⁾	\$	\$
Proceeds, before expenses, to FibroBiologics, Inc. ⁽²⁾	\$	\$

(1) We have agreed to pay to the placement agent a cash fee equal to 7.0% of the gross proceeds received by us in the offering. We have also agreed to reimburse the placement agent for certain expenses and closing costs. See “Plan of Distribution” for additional information and a description of the compensation payable to the placement agent.

(2) The amount of offering proceeds to us presented in this table does not give effect to any exercise of the Warrants.

We are an “emerging growth company” and a “smaller reporting company” as defined under the federal securities laws and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and may elect to do so in future filings. See “Prospectus Summary—Implications of Being an Emerging Growth Company and a Smaller Reporting Company.”

Investing in our common stock involves a high degree of risk. See the “Risk Factors” section beginning on page 10 of this prospectus for the risks and uncertainties you should consider before investing in our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Delivery of the securities offered hereby is expected to be made on or about April , 2024, subject to satisfaction of certain customary closing conditions.

Sole Placement Agent

Maxim Group LLC

The date of this prospectus is , 2024

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You should rely only on the information contained in this prospectus or contained in any free writing prospectus filed with the Securities and Exchange Commission. Neither we nor the placement agent have authorized anyone to provide any information different from, or in addition to, the information contained in this prospectus and in any free writing prospectuses we have prepared or that have been prepared on our behalf or to which we have referred you. Neither we nor the placement agent take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are offering to sell, and seeking offers to buy, the securities only under the circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus is current only as of its date, regardless of the time of delivery of this prospectus or of any sale of our securities. Our business, financial condition, results of operations and prospects may have changed since such date.

For investors outside the United States: Neither we nor the placement agent have done anything that would permit the use of or possession or distribution of this prospectus or any related free writing prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside the United States.

ABOUT THIS PROSPECTUS

This prospectus is a part of a registration statement on Form S-1 that we filed with the Securities and Exchange Commission, or the SEC. We may provide a prospectus supplement to add information to, or update or change information contained in, this prospectus, including the section titled “*Plan of Distribution*”. You may obtain this information without charge by following the instructions under the “*Where You Can Find Additional Information*” section of this prospectus. You should read this prospectus and any prospectus supplement before deciding to invest in our securities.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed or will be filed as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described under “*Where You Can Find Additional Information*.”

PROSPECTUS SUMMARY

This summary highlights select information contained elsewhere in this prospectus and does not contain all the information you should consider before making an investment decision. You should read the entire prospectus carefully, including the sections entitled “Risk Factors,” “Cautionary Note Regarding Forward-Looking Statements,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and the accompanying notes included elsewhere in, or incorporated by reference into, this prospectus before making an investment decision. Unless otherwise indicated or the context otherwise requires, all references in this prospectus to “we,” “us,” “our,” the “Company,” “FibroBiologics” and similar terms refer to FibroBiologics, Inc.

Overview

We are a clinical-stage cell therapy company focused on developing and commercializing fibroblast-based therapies for patients suffering from chronic diseases with significant unmet medical needs, including degenerative disc disease, multiple sclerosis, wound healing, and certain cancers, and for potential extension of life applications including thymic and splenic involution reversal.

We were formed in April 2021 as a Texas limited liability company under the name FibroBiologics, LLC, and converted to a Delaware corporation in December 2021 under the name FibroBiologics, Inc. On April 12, 2023, we changed our name to FibroBiologics, Inc. In connection with our formation, we issued shares of our Series A Preferred Stock, or the Series A Preferred Stock, to our then parent, SpinalCyte LLC (doing business as FibroGenesis), or FibroGenesis, in return for rights to certain intellectual property through a patent assignment agreement and an intellectual property cross-licensing agreement. Developing the intellectual property obtained from FibroGenesis was the basis for our formation. Prior to our inception, preclinical research and development related to the transferred intellectual property took place under FibroGenesis.

Fibroblasts Technology Platform

Fibroblasts and stem cells are the only two cell types in the human body that can regenerate tissue and organs. Studies have indicated that mesenchymal stem cells and fibroblasts share many surface markers in common, and can differentiate into many cells including adipocytes, chondrocytes, osteoblasts, hepatocytes, and cardiomyocytes, and can regulate the immune system. However, transcriptomic and epigenetic studies have indicated a clear difference between the two cell types.

Fibroblasts comprise the main cell type of connective tissue, possessing a spindle-shaped morphology, whose classical function has historically been believed to produce an extracellular matrix responsible for maintaining the structural integrity of the tissue. Fibroblasts also play an important role in maintaining stem cell niches in organs and are involved in every stage of wound healing.

Fibroblasts are favorable to stem cells as a cell therapy treatment platform because fibroblasts:

- can be non-invasively harvested from a variety of skin donors from surgical procedures such as tummy tuck flaps or simple biopsy punch;
- have a faster doubling time in culture than stem cells;
- possess superior immune modulatory activity compared with stem cells;
- exhibit enhanced ability to produce regenerative cytokines and growth factors compared with stem cells; and
- are more economical to isolate, culture and expand compared with stem cells because fibroblasts do not require the use of expensive tissue culture media and additives.

Studies have demonstrated that allogeneic fibroblasts, much like mesenchymal stem cells, are immune-privileged and do not provoke an immune response *in vitro* and *in vivo*. If autologous fibroblasts were required instead, it would mean that cells would have to be harvested from each patient, processed and cultured, and then administered to the same patient, which would be more costly and inefficient. Because allogeneic fibroblasts do not cause an immune response, we are planning to build our own current Good Manufacturing Practices, or cGMP, manufacturing facility to source allogeneic fibroblast cells for clinical testing of our product candidates and for commercial sales if our product candidates receive marketing approval.

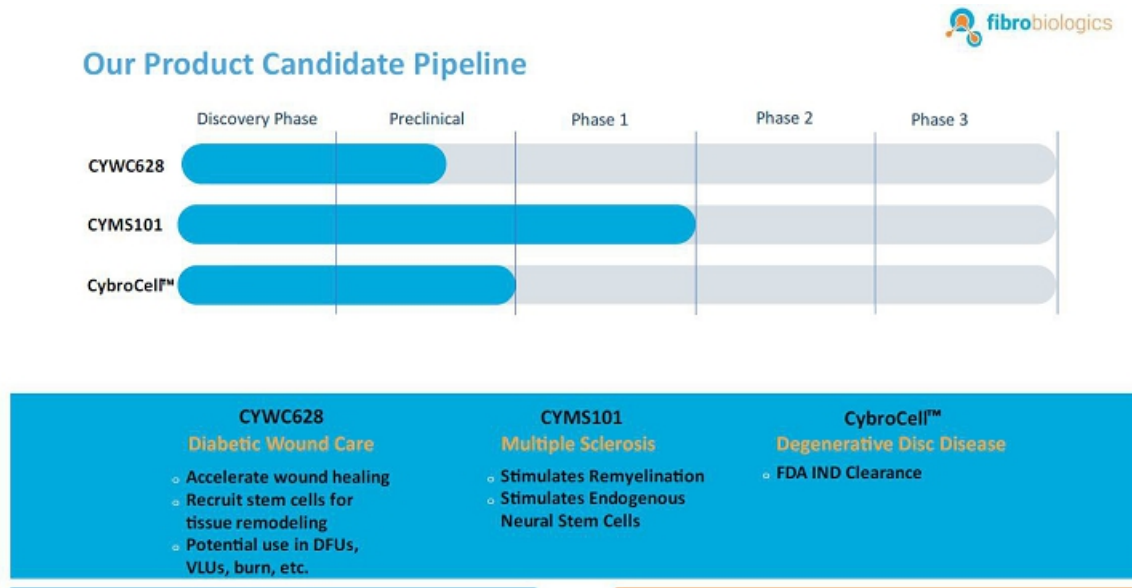
To date, however, no fibroblast therapy products have been approved and there have only been a few clinical trials involving fibroblasts. The costs to develop, manufacture, and commercialize product candidates utilizing our fibroblasts technology platform may exceed our estimates. Furthermore, the biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary and novel products and product candidates so any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future. Additional information regarding risks and uncertainties relating to our product candidates technology and business are set forth in the sections titled “—*Summary of Risk Factors*” and “*Risk Factors*” in this prospectus.

Our Management Team and Oversight

We have assembled an executive leadership team comprised of our founder, chief executive officer and chairperson of our board of directors, our chief scientific officer, our chief financial officer, and our general counsel, with combined successful track records in startup entrepreneurial companies and in the life sciences industry. Our executive leadership team works under the oversight of our board of directors who are recognized leaders with hands-on industry experience. We also have a team of world-renowned scientists with relevant expertise on our scientific advisory board to help guide our research and development efforts.

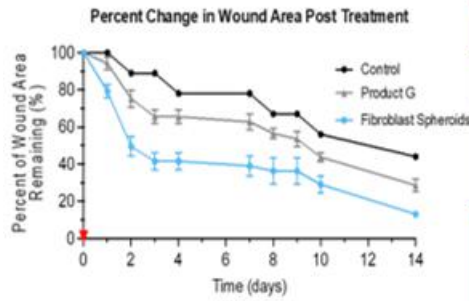
Our Current Pipeline

We have a pipeline of product candidates at various stages of development, including the following:



CYWC628 for Wound Healing: We are in the late pre-clinical stages of developing CYWC628 as an allogeneic fibroblast cell-based therapy for wound healing. Our studies are presently focused on utilizing fibroblasts and fibroblast-derived cells to treat wounds in diabetic mice. Our data to date is compiled from four separate animal model studies (manuscript for publication in progress). Each study utilized 16 wild type as well as leptin mutated NONcNZO10LTJ mouse that develops type 2 diabetes when fed a high fat diet. Wound size and area for all our experiments were measured using an eKare inSight™ device which is FDA approved for measuring and monitoring wound size, area and depth. Phase 1 of our pre-clinical study studied the subcutaneous and topically administered single cell mouse dermal fibroblasts (both treatments administered every two days), as well as mouse dermal fibroblast derived exosomes. The results of this study indicated significant improvement in wound healing ($p < 0.0005$) for topically administered mouse fibroblasts and mouse fibroblast exosomes as compared to untreated control, and significant improvement in wound healing with subcutaneous inject of fibroblast in the wound periphery ($p < .005$). Our Phase 2 pre-clinical study studied the impact of using frozen and thawed single cell mouse fibroblasts administered every two days, as well as mouse spheroid fibroblasts, one-time topical administration, measuring 250 um and each containing approximately 10,000 mouse dermal fibroblasts. In total 100 spheroids were topically administered on to an 8 millimeter diameter wound on the back of the wild type and leptin mutated mice. The results of the study indicated significant improvement in wound healing with the frozen thawed single cell mouse fibroblasts ($p < 0.005$), as well as 4°C stored mouse fibroblast spheroids ($p < 0.0005$) with both mouse types. Our objective was to test the feasibility of using spheroid fibroblasts as an extended-release mechanism on wound surfaces. The results indicated that spheroid fibroblasts are easier to use and more viable than single cell fibroblasts, and generate more significant results. Our Phase 3 pre-clinical study tested the effect of using a single topical administration of human dermal fibroblast (CYWC628) spheroids compared to a single administration of mouse dermal spheroids, in addition to comparing with a commercially available and FDA approved diabetic foot ulcer treatment called Grafix™. The results of our study indicated that CYWC628 significantly improved wound healing rate ($p < 0.0005$) as compared to untreated control as well as significant improvement ($p < 0.05$) over mouse fibroblast spheroids and Grafix™. For our Phase 4 pre-clinical study we studied the impact of a single topical treatment of CYWC628 spheroids and Grafix™ on a chemically induced chronic wound model often used to mimic diabetic foot ulcers in animal models. The results of our study indicated a 58.5% reduction in wound area three days after a single topical administration of CYWC628 as compared to 34.5% for Grafix™ ($p < 0.005$). The untreated saline control group had an 11% improvement in wound healing which was not statistically significant ($p < 0.06$). Our results also indicated that with multiple topical administration of CYWC628, the rate of wound closure will likely be more rapid.

The following graph and chart summarize the results of our Phase 4 pre-clinical study.



Comparison	D1	D2	D3	D4	D7	D8	D8	D10	D14
Product G vs. Control	ns	ns	ns	ns	ns	ns	ns	ns	ns
Fibroblast Spheroids vs. Control	**	****	****	****	****	****	****	***	****
Fibroblast Spheroids vs. Product G	*	****	****	***	***	**	**	*	*

- 58.5% reduction in wound size within 4 days of treatment with fibroblast spheroids
- 34.5% reduction in wound size with 4 days of treatment with Product G

Note: * indicates level of statistical significance with a p value of ≤ 0.05
 ** indicates level of statistical significance with a p value of ≤ 0.01
 *** indicates level of statistical significance with a p value of ≤ 0.001
 **** indicates level of statistical significance with a p value of ≤ 0.0001

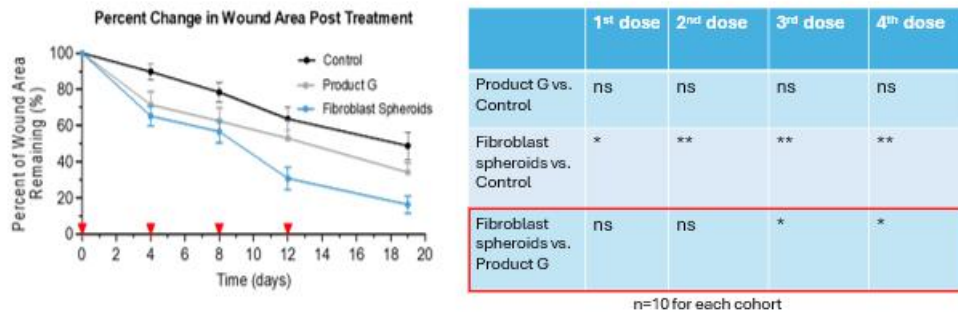
CYMS101 for Multiple Sclerosis: We are developing CYMS101 as an allogeneic fibroblast cell-based therapy to treat multiple sclerosis, or MS. After completing animal studies using CYMS101 (allogeneic fibroblast cells), we received approval from Mexico to conduct clinical investigations using the fibroblast cell composition for patients with MS and have completed a Phase 1 clinical trial called “Feasibility Study of Tolerogenic Fibroblasts in Patients with Refractory Multiple Sclerosis.” The study was conducted in five participants. The primary objective of the study was to assess safety, and the secondary objective was to assess efficacy. The results of the study for safety were no adverse effects during intravenous injection of the tolerogenic fibroblasts, no short or long-term impact in complete blood count test during the 16-week monitoring period, and no short or long-term impact in electrocardiogram results during the 16-week monitoring period. In addition, the results of the study for efficacy included general improvement of Paced Auditory Serial Addition Test, or PASAT, score for all patients during the 16-week monitoring period, general improvement of 9-hole Peg test completion time for all patients during the 16-week testing period, no general improvement or deterioration noted with the Timed 25-Foot walk test, no general improvement or deterioration noted with Expanded Disability Status Scale, or EDSS, test, and no patient exhibited further deterioration during the trial. We are currently conducting further research to determine the mode of action of fibroblasts in oligodendrocyte expansion and expect to file an IND application for a Phase 2 clinical trial in MS. We will likely seek a strategic partner to collaborate with us on the development of CYMS101 either before initiating the Phase 2 clinical trial, or after its completion, if successful, and prior to commencing with a Phase 3 clinical trial.

CybroCell™ for Degenerative Disc Disease: CybroCell™ is an allogeneic fibroblast cell-based therapy for degenerative disc disease. This new technology is being designed as an alternative method for repairing the cartilage of the intervertebral disc (or any other articular cartilage). The method is based on using human dermal fibroblasts, or HDFs, which are forced to differentiate into chondrocyte-like cells *in vivo* using the mechanical force and intermittent hydrostatic pressure found in the spine, for chondrogenic differentiation of fibroblasts. We believe our solution will prove superior to existing treatments because we expect it will be less invasive, and will regenerate the disc, restore function and reduce pain without debilitating long-term effects. We have completed two rounds of animal studies. The results from the studies were positive and resulted in “first in human” trial approval in our investigational new drug, or IND, submission to the U.S. Food and Drug Administration, or FDA. We have received IND clearance from the FDA, conditional upon approval of our master cell bank, to run a Phase 1/2 clinical trial for patients suffering from degenerative disc disease. We will be conducting this trial within the United States. A timeline will be determined through discussions with the FDA.

Business Update and Recent Developments

CYWC628 for Wound Healing: For our Phase 5 pre-clinical study, using a diabetic mouse model (BKS.Cg-Dock7m), we studied the impact of multiple administrations of CYWC628 spheroids and Grafix™ on a chemically induced chronic wound often used to mimic diabetic foot ulcers in animal models. The CYWC628 spheroids were administered on Day 0, Day 4, Day 8 and Day 12. The results of our study with this mouse model of a chronic wound indicated (i) a 34.8% reduction in wound area four days after the first administration (day 4) of CYWC628 as compared to 28.6% for Grafix™ ($p > 0.05$), which was not statistically significant, and 10.2% for the untreated saline control group ($p < 0.05$); (ii) a 43.4% reduction in wound area four days after the second administration (day 8) of CYWC628 as compared to 37.6% for Grafix™ ($p > 0.05$), which was not statistically significant, and 21.7% for the untreated saline control group ($p < 0.05$); (iii) a 69.3% reduction in wound area four days after the third administration (day 12) of CYWC628 as compared to 47.13% for Grafix™ ($p < 0.05$), which was statistically significant, and 36.4% for the untreated saline control group ($p < 0.05$), which was also statistically significant.; and (iv) an 83.8% reduction in wound area four days after the fourth administration (Day 19) of CYWC628 as compared to 66% for Grafix™ ($p < 0.05$), which was statistically significant, and 55.2% for the untreated saline control group ($p < 0.01$), which was also statistically significant. Grafix™ results as compared to saline control were not statistically significant at any of the measured timepoints, whereas CYWC628 as compared to saline control was statistically significant at all measured timepoints.

The following graph and chart summarize the results of our Phase 5 pre-clinical study.



At day 19: 83.8% average wound closure for fibroblast spheroids compared with 66.0% for Product G and 51.2% for Control

Note: * indicates level of statistical significance with a p value of ≤ 0.05
 ** indicates level of statistical significance with a p value of ≤ 0.01

Effective wound healing is not only determined by the efficiency of wound closure, but also by the quality of the healed wound. For our multiple CYWC628 administration study, we also looked at several metrics essential to the quality of wound healing. These metrics are re-epithelialization, granulation, cell proliferation, neo-vascularization, and fibroblast recruitment. The results of the study indicated that at day 19 after the final treatment, CYWC628 had a significantly improved epithelialization, granulation, cell proliferation (as measured using Ki67), neo-vascularization (as measured by CD31 and VEGF), and fibroblast recruitment (as measured by α SMA and IL-6) compared to control and Grafix™.

For our remaining pre-clinical studies, we will investigate multiple administrations of CYWC628 on a chemically induced chronic wound NONcNZO10/LtJ mouse model, complete a dose titration study to provide information on effective dose range of CYWC628, and complete an acute and chronic toxicity study. We expect to complete these studies in the 3rd quarter of 2024. Based upon our results achieved to date and the expected timing of these additional pre-clinical studies, we are planning to initiate a Phase 1/2 clinical trial in Australia for treatment of diabetic foot ulcers in 2025 with results expected in the third quarter of 2025.

Manufacturing: We are planning to complete a technology transfer of our cell manufacturing processes to a contract development and manufacturing organization, or CDMO, and conduct feasibility studies for our fibroblast spheroid-based drug product, with the intent to enter into a master services agreement with that CDMO to supply drug product for clinical trials. We expect to produce a master cell bank, working cell bank, and drug product for use in clinical trials by year end 2024.

Our Competitive Strengths

Our strengths lie in our technology platform centered around the power of fibroblasts and in our experienced leadership team. Fibroblasts are the most common cell found in the human body and we believe they are more robust and potent than stem cells. Our intellectual property portfolio includes 48 issued patents and 108 pending patents for the use of fibroblasts in diverse therapeutic areas. We also have an experienced leadership team with successful track records in entrepreneurial startup companies and the life sciences industry, a board of directors with life sciences operational leadership experience, and a world-renowned scientific advisory board with relevant expertise.

Our Strategy

We are leveraging fibroblast cells as a technology platform to research and develop innovative treatments for chronic diseases with significant unmet treatment needs. Our vision is to become a world leader in regenerative medicine through a rigorous scientific process and commitment to serving patients' needs. To achieve our vision, we will focus our efforts on the following strategy:

- Prioritize our initial clinical development efforts on product candidates with the combination of significant unmet treatment needs, lower risk and high market potential.

- Partner with contract research organizations, or CROs, with the relevant expertise and experience to successfully and timely execute clinical trials to generate reliable pivotal data that can be used to seek approvals.
- Attract and retain scientists with the skill sets required to conduct preclinical studies and identify the optimal paths forward to clinical trials.
- Invest in critical capabilities required to produce and supply fibroblasts for clinical trials and initial commercialization.
- Protect, expand and defend our intellectual property portfolio around fibroblasts.
- Expand development efforts in product candidates with longer development timelines, greater risk and significant unmet treatment needs as funding allows.

Summary of Risk Factors

Our business is subject to numerous risks and uncertainties that you should be aware of before making an investment decision, including those highlighted in the section entitled “*Risk Factors*” in this prospectus. These risks include, but are not limited to, the following:

- The successful development of biopharmaceutical products is highly uncertain.
- We have a limited operating history and none of our current product candidates have been approved for commercial sale.
- We have incurred significant net losses since inception, expect to continue to incur significant net losses for the foreseeable future and may never achieve or maintain profitability.
- We will require substantial additional capital to finance our operations. If we are unable to raise such capital when needed, or on acceptable terms, we may be forced to delay, reduce and/or eliminate one or more of our research and drug development programs or future commercialization efforts.
- The regulatory approval processes of the FDA, the European Medicines Agency, or the EMA, and other comparable foreign regulatory authorities are lengthy, time consuming and inherently unpredictable.
- We may encounter substantial delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.
- The outcome of preclinical studies or early clinical trials may not be predictive of the success of later clinical trials, and the results of our clinical trials may not satisfy the requirements of the FDA, the EMA or other comparable foreign regulatory authorities.
- Interim, topline and preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.
- Our current or future product candidates may cause adverse events, toxicities or other undesirable side effects when used alone or in combination with other approved products or investigational new drugs that may result in a safety profile that could inhibit regulatory approval, prevent market acceptance, limit their commercial potential or result in significant negative consequences.
- Even if approved, our product candidates may not achieve adequate market acceptance.
- Our refrigerated product candidates require specific storage, handling and administration at the clinical sites.
- We intend to identify and develop novel cell therapy product candidates, which makes it difficult to predict the time, cost and potential success of product candidate development.

- Because cell therapy is novel and the regulatory landscape that governs any cell therapy product candidates we may develop is rigorous, complex, uncertain and subject to change, we cannot predict the time and cost of obtaining regulatory approval, if we receive it at all, for any product candidates we may develop.
- We may be unable to obtain U.S. or foreign regulatory approvals and, as a result, may be unable to commercialize our product candidates.
- Any product candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated.
- We have limited experience in designing clinical trials.
- Our long-term prospects depend in part upon discovering, developing and commercializing additional product candidates, which may fail in development or suffer delays that adversely affect their commercial viability.
- We have never commercialized a fibroblast cell-based therapy product candidate before and may lack the necessary expertise, personnel and resources to successfully commercialize any product candidates on our own or together with suitable collaborators.
- We face significant competition.
- If we are unable to establish sales or marketing capabilities or enter into agreements with third parties to sell or market our product candidates, we may not be able to successfully sell or market our product candidates that obtain regulatory approval.
- In order to successfully implement our plans and strategies, we will need to grow the size of our organization, and we may experience difficulties in managing this growth.
- We are subject to risks related to our dependence on third parties (i) to conduct certain aspects of our preclinical studies and clinical trials and (ii) for certain portions of our manufacturing process.
- We are highly dependent on our Houston, Texas facility and any failure to maintain the use of this facility would have a material and adverse effect on our business.
- We are subject to extensive government regulations.
- Our business entails a significant risk of product liability.
- The FDA, the EMA and other comparable foreign regulatory authorities may not accept data from trials conducted in locations outside of their jurisdiction.
- Even if our product candidates receive regulatory approval, they will be subject to significant post-marketing regulatory requirements and oversight.
- Our success depends on our ability to protect our intellectual property and our proprietary technologies, and we are subject to various risks relating to our intellectual property.
- We may not be able to continue to meet Nasdaq’s continued listing requirements.
- The requirements of being a public company may strain our resources, divert management’s attention and affect our ability to attract and retain executive management and qualified board members.
- We are a “controlled company” within the meaning of The Nasdaq Stock Market Rules because our insiders beneficially own more than 50% of the voting power of our outstanding voting securities.
- We have 2,500 shares of Series C Preferred Stock with super voting rights.
- We have identified a material weakness in our internal controls over financial reporting due to lack of segregation of duties.
- Our shares of common stock have a very short trading history on Nasdaq. An active trading market may not develop or continue to be liquid and the market price of our shares of common stock may be volatile.

Reverse Stock Split

On October 6, 2023, our board of directors and our stockholders each approved a 1-for-4 reverse stock split of all classes of our issued and outstanding capital stock (the “Reverse Stock Split”), and on October 31, 2023, we filed an amended and restated certificate of incorporation with the State of Delaware to immediately effect the Reverse Stock Split. All share and per share information in this prospectus have been adjusted to reflect the Reverse Stock Split, unless otherwise stated.

Implications of being a Controlled Company

Our founder and Chief Executive Officer, Pete O’Heeron, collectively beneficially owns approximately 60% of the voting power of our outstanding voting securities and we are a “controlled company” within the meaning of the listing rules of The Nasdaq Stock Market LLC.

As long as our principal shareholder owns at least 50% of the voting power of our Company, we will continue to be a “controlled company” as defined under Nasdaq Listing Rules. As a controlled company, we are permitted to rely on certain exemptions from Nasdaq’s corporate governance rules, including:

- an exemption from the rule that a majority of our board of directors must be independent directors;
- an exemption from the rule that the compensation of our chief executive officer must be determined or recommended solely by independent directors; and
- an exemption from the rule that our director nominees must be selected or recommended solely by independent directors.

Although we currently do not intend to rely on the “controlled company” exemption under the Nasdaq listing rules, we could elect to rely on this exemption in the future. As a result, you may not in the future have the same protection afforded to shareholders of companies that are subject to these corporate governance requirements.

Implications of being an emerging growth company and a smaller reporting company

We are an “emerging growth company” as defined in the Securities Act of 1933, or the Securities Act, as modified by the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. As such, we are eligible to take, and intend to take, advantage of certain exemptions from various reporting requirements applicable to other public companies that are not emerging growth companies for as long as we continue to be an emerging growth company, including (i) the exemption from the auditor attestation requirements with respect to internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, (ii) the exemptions from say-on-pay, say-on-frequency and say-on-golden parachute voting requirements and (iii) reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements.

We will remain an emerging growth company until the earliest of (i) December 31, 2028, (ii) the last day of the fiscal year in which we have total annual gross revenue of at least \$1.235 billion, (iii) the last day of the fiscal year in which we are deemed to be a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, which would occur if the market value of our common stock held by non-affiliates was \$700.0 million or more as of the last business day of the second fiscal quarter of such year or (iv) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period.

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 certain accounting standards until those standards would otherwise apply to private companies. We have elected to avail ourselves of this extended transition period and, as a result, we may adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-public companies instead of the dates required for other public companies.

We are also a “smaller reporting company” as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies until the fiscal year following the determination that our voting and non-voting common stock held by non-affiliates is \$250 million or more measured on the last business day of our second fiscal quarter, or our annual revenues are less than \$100 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is \$700 million or more measured on the last business day of our second fiscal quarter.

Corporate Information

We were formed in April 2021 as a Texas limited liability company under the name FibroBiologics, LLC, and converted to a Delaware corporation in December 2021 under the name FibroBiologics, Inc. On April 12, 2023, we changed our name to FibroBiologics, Inc. Our principal executive offices are located at 455 E. Medical Center Blvd., Suite 300, Houston, Texas 77598. Our telephone number is (281) 671-5150, and our website address is www.fibrobiologics.com. Information contained on or that can be accessed through our website is neither a part of nor incorporated by reference into this prospectus, and you should not consider information on our website to be part of this prospectus. Our website address is included in this prospectus as an inactive textual reference only.

THE OFFERING

The summary below describes the principal terms of this offering.

Issuer	FibroBiologics, Inc.
Units Offered	1,801,801 Units on a best-efforts basis at an assumed offering price of \$11.10 per Unit, which is equal to the closing price of our common stock on The Nasdaq Global Market on April 23, 2024. Each Unit consists of one share of our common stock and one Warrant. The Units have no stand-alone rights and will not be certificated or issued as stand-alone securities. The shares of common stock and the Warrants are immediately separable and will be issued separately in this offering.
Warrants Offered	<p>The 1,801,801 Warrants will have an exercise price of \$11.10 per share of common stock (100% of the offering price per Unit), will be immediately exercisable and will expire five years from the date of issuance. The registration statement of which this prospectus forms a part also registers the shares of common stock issuable upon exercise of the Warrants.</p> <p>To better understand the terms of the Warrants, you should carefully read the “Description of Our Securities” section on page 83 of this prospectus. You should also review the form of Warrant, which is filed as an exhibit to the registration statement of which this prospectus forms a part.</p>
Shares of common stock outstanding prior to the offering	32,719,125 shares
Common stock to be outstanding immediately after this offering	Up to 34,520,926 shares, assuming no exercise of the Warrants
Assumed public offering price per Unit	\$11.10 per Unit
Use of Proceeds	<p>Assuming the maximum number of Units are sold in this offering at an assumed public offering price of \$11.10 per Unit, which represents the last reported sale price of our common stock on The Nasdaq Global Market on April 23, 2024, we estimate the net proceeds from this offering will be approximately \$18.4 million, after deducting the placement agent discounts and commissions and estimated offering expenses payable by us. However, this is a best efforts offering with no minimum number of securities or amount of proceeds as a condition to closing, and we may not sell all or any of these securities offered pursuant to this prospectus; as a result, we may receive significantly less in net proceeds.</p> <p>We currently intend to use the net proceeds received from this offering for general corporate purposes, including to hire key personnel, conduct research and development, and for working capital. See “Use of Proceeds” on page 67.</p>
Market for Common Stock and Warrants	<p>Our Common Stock is listed on Nasdaq Global Market under the symbol FBLG.</p> <p>No public market exists for the Warrants and we do not intend to list the Warrants.</p>
Risk Factors	Any investment in the securities offered hereby is speculative and involves a high degree of risk. You should carefully consider the information set forth under “Risk Factors” beginning on page 10 of this prospectus and elsewhere in this prospectus for a discussion of factors to consider before deciding to purchase our securities.
Lock-up Agreements	We, along with our directors and officers, have agreed with the placement agent to enter into agreements not to offer for sale, issue, sell, contract to sell, pledge or otherwise dispose of any of our common stock or securities convertible into common stock for a period of ninety (90) days after this offering is completed, without the prior written consent of Maxim Group LLC. See “Shares Eligible for Future Sale” and “Plan of Distribution” for additional information.
Transfer Agent and Registrar	The transfer agent and registrar for our shares of common stock is VStock Transfer, LLC, with its business address at 18 Lafayette Place, Woodmere, NY 11598.

Unless otherwise indicated, all information in this prospectus assumes no exercise of the Warrants being offered in this offering.

SUMMARY FINANCIAL AND OTHER DATA

The summary financial and other data set forth below should be read together with our financial statements and the related notes to those statements, as well as the “*Management’s Discussion and Analysis of Financial Condition and Results of Operations*” section incorporated by reference into this prospectus. The statements of operations and cash flows data for the years ended December 31, 2023 and 2022, have been derived from our audited financial statements incorporate by reference into this prospectus. Our historical results are not necessarily indicative of the results that may be expected in any future period.

All share numbers and per share amounts in the tables below have been adjusted to reflect the Reverse Stock Split.

	For the years ended December 31,	
	2023	2022
	(in thousands, except shares and per share data)	
Statements of Operations Data:		
Operating expenses:		
Research and development	\$ 2,368	\$ 1,147
General, administrative and other	6,521	3,320
Total operating expenses	8,889	4,467
Loss from operations	(8,889)	(4,467)
Change in fair value of liability instrument	(7,236)	—
Other loss	(213)	—
Interest expense	(147)	(654)
Net loss	\$ (16,485)	\$ (5,121)
Deemed dividend	(2,573)	—
Net loss attributable to common stockholders	\$ (19,058)	\$ (5,121)
Net loss per share, basic and diluted	\$ (0.68)	\$ (0.18)
Weighted-average shares outstanding, basic and diluted	28,230,842	28,230,842
Statements of Cash Flows Data:		
Net cash used in operating activities	\$ (6,401)	\$ (4,066)
Net cash used in investing activities	\$ (495)	\$ —
Net cash provided by financing activities	\$ 13,793	\$ 5,925

	As of December 31, 2023 (in thousands)
Balance Sheet Data:	
Cash and cash equivalents	\$ 9,163
Working capital ¹	\$ 32
Total assets	\$ 11,821
Total liabilities	\$ 10,568
Total stockholders’ equity	\$ 1,253

¹ We define working capital as current assets less current liabilities.

RISK FACTORS

An investment in our common stock involves a high degree of risk. You should carefully consider the following risks and uncertainties, together with all of the other information contained in this prospectus, including our financial statements and related notes appearing elsewhere in this prospectus, before deciding whether to invest in our securities. The occurrence of one or more of the events or circumstances described in these risk factors, alone or in combination with other events or circumstances, may have a material adverse effect on our business, reputation, revenue, financial condition, results of operations and future prospects, in which event you could lose all or part of your investment. The risks and uncertainties described below are not intended to be exhaustive and are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations. This prospectus also contains forward-looking statements that involve risks and uncertainties. See "Cautionary Note Regarding Forward-Looking Statements." Our actual results could differ materially and adversely from those anticipated in these forward-looking statements as a result of certain factors, including those described below.

Risks Related to this Offering

This is a best-efforts offering, no minimum amount of securities is required to be sold, and we may not raise the amount of capital we believe is required for our business plans, including our near-term business plans.

The placement agent has agreed to use its reasonable best efforts to solicit offers to purchase the securities in this offering. The placement agent has no obligation to buy any of the securities from us or to arrange for the purchase or sale of any specific number or dollar amount of the securities. There is no required minimum number of securities that must be sold as a condition to completion of this offering. Because there is no minimum offering amount required as a condition to the closing of this offering, the actual offering amount, placement agent fees and proceeds to us are not presently determinable and may be substantially less than the maximum amounts set forth herein. We may sell fewer than all of the securities offered hereby, which may significantly reduce the amount of proceeds received by us, and investors in this offering will not receive a refund in the event that we do not sell an amount of securities sufficient to support our continued operations, including our near-term continued operations. Thus, we may not raise the amount of capital we believe is required for our operations in the short-term and may need to raise additional funds to complete such short-term operations. Such additional fundraises may not be available or available on terms acceptable to us.

You will experience immediate dilution as a result of this offering and may experience additional dilution in the future.

The public offering price for the Units offered hereby will be substantially higher than the net tangible book value per share of our common stock immediately after this offering. If you purchase Units in this offering, you will incur substantial and immediate dilution in the net tangible book value of your investment. Net tangible book value per share represents the amount of total tangible assets less total liabilities, divided by the number of shares of our common stock then outstanding. After giving effect to the sale by us of 1,801,801 Units in this offering at an assumed public offering price of \$11.10 per Unit, and after deducting placement agent fees and estimated offering expenses payable by us, investors in this offering can expect an immediate dilution of \$10.37 per share. To the extent that options and warrants that are currently outstanding are exercised, there will be further dilution to your investment. We may also issue additional common stock, options, warrants and other securities in the future that may result in further dilution of your shares of our common stock.

Future sales of our common stock, or the perception that such sales may occur, could depress the trading price of our common stock.

After the completion of this offering, we expect to have up to 34,537,007 shares of our common stock outstanding. We and each of our officers and directors have signed lock-up agreements for a period of 90 days following the date of closing of this offering, subject to specified exceptions. See "Plan of Distribution."

The placement agent may, in its sole discretion and without notice, release all or any portion of the shares of our common stock subject to lock-up agreements. As restrictions on resale end, the market price of our common stock could drop significantly if the holders of these shares of our common stock sell them or are perceived by the market as intending to sell them. These factors could also make it more difficult for us to raise additional funds through future offerings of our common stock or other securities.

We have broad discretion in the use of the net proceeds we receive from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds we receive in this offering, including for any of the purposes described in the section entitled "Use of Proceeds," and you will not have the opportunity as part of your investment decision to assess whether our management is using the net proceeds appropriately. Because of the number and variability of factors that will determine our use of our net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business and cause the price of our common stock to decline. Pending their use, we may invest our net proceeds from this offering in short-term, investment-grade, interest-bearing securities. These investments may not yield a favorable return to our stockholders.

The Warrants are speculative in nature.

The Warrants do not confer any rights of common stock ownership on their holders, such as voting rights or the right to receive dividends, but rather merely represent the right to acquire shares of our common stock at a fixed price for a limited period of time. Specifically, holders of the Warrants may exercise their right to acquire the common stock and pay an exercise price of \$11.10 per share, prior to five years from the date of issuance, after which date any unexercised Warrants will expire and have no further value.

Holders of Warrants will have no rights as a common stockholder unless such holders exercise their Warrants and acquire our common stock.

Until holders of Warrants acquire shares of our common stock upon exercise of the Warrants, holders of Warrants will have no rights with respect to the shares of our common stock underlying such Warrants. Upon exercise of the Warrants, the holders thereof will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

There is no public market for the Warrants in this offering, which may limit your ability to resell the Warrants.

There is no established public trading market for the Warrants, and we do not expect a market to develop. In addition, we do not intend to apply for listing of the Warrants on any securities exchange or recognized trading system. As a result, the Warrants may not be widely distributed and purchasers of the Warrants may be unable to resell them or sell them only at an unfavorable price for an extended period of time, if at all.

The market price of our common stock may never exceed the exercise price of the Warrants issued in connection with this offering.

The Warrants being issued in connection with this offering become exercisable upon issuance and will expire five years from the date of issuance. The market price of our common stock may never exceed the exercise price of the Warrants prior to their date of expiration. Any warrants not exercised by their date of expiration will expire worthless and we will be under no further obligation to the warrant holder.

Risks Related to Our Financial Condition and Capital Requirements

The successful development of biopharmaceutical products is highly uncertain.

Successful development of biopharmaceutical products is highly uncertain and is dependent on numerous factors, many of which are beyond our control. Product candidates that appear promising in the early phases of development may fail to reach the market for several reasons, including:

- clinical trial results showing the product candidates to be less effective than expected (for example, a clinical trial could fail to meet its primary or key secondary endpoint(s)) or have an unacceptable safety or tolerability profile;
- failure to receive the necessary regulatory approvals or a delay in receiving such approvals, which, among other things, may be caused by patients who fail the trial screening process, slow enrollment in clinical trials, patients dropping out of trials, patients lost to follow-up, length of time to achieve trial endpoints, additional time requirements for data analysis or NDA preparation, discussions with the FDA, an FDA request for additional preclinical or clinical data or unexpected safety or manufacturing issues;
- preclinical study results showing the product candidate to be less effective than desired or to have harmful side effects;
- post-marketing approval requirements; or
- the proprietary rights of others and their competing products and technologies that may prevent our product candidates from being commercialized.

The length of time necessary to complete clinical trials and submit an application for marketing approval for a final decision by a regulatory authority varies significantly from one product candidate to the next and from one country or jurisdiction to the next and may be difficult to predict.

Even if we are successful in obtaining marketing approval, commercial success of approved products may also depend in large part on the availability of coverage and adequate reimbursement from third-party payors, including government payors such as the Medicare and Medicaid programs and managed care organizations in the United States or country-specific governmental organizations in foreign countries, which may be affected by existing and future healthcare reform measures designed to reduce the cost of healthcare. Third-party payors could require us to conduct additional studies, including post-marketing studies related to the cost effectiveness of an approved product, to qualify for reimbursement, which could be costly and divert our resources. If government and other healthcare payors were to not provide coverage and adequate reimbursement for our products once approved, market acceptance and commercial success may be reduced.

In addition, if any of our product candidates receive marketing approval, we will be subject to significant regulatory obligations regarding the submission of safety and other post-marketing information and reports and registration, and will need to continue to comply (or ensure that any third-party providers comply) with cGMPs and good clinical practices, or GCPs, for any clinical trials that we conduct post-approval. In addition, there is always the risk that we, a regulatory authority or a third party might identify previously unknown problems with a product post-approval, such as adverse events of unanticipated severity or frequency. Compliance with these requirements is costly, and any failure to comply or other issues with our product candidates post-approval could adversely affect our business, financial condition and results of operations.

We have a limited operating history and none of our current product candidates have been approved for commercial sale, which may make it difficult for you to evaluate our current business and predict our future success and viability.

Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We are a clinical-stage cell therapy company with a limited operating history upon which you can evaluate our business and prospects. None of our current product candidates are approved for commercial sale and we have not generated any revenue from such product candidates. To date, we have devoted substantially all of our resources and efforts to organizing and staffing our company, business planning, executing partnerships, raising capital, discovering, identifying and developing potential product candidates, securing related intellectual property rights and conducting and planning preclinical studies and clinical trials of our product candidates. In relation to our current product candidates, we have not yet demonstrated our ability to successfully complete any Phase 3 clinical trials, obtain marketing approvals, manufacture a commercial-scale product or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. As a result, it may be more difficult for you to accurately predict our future success or viability than it could be if we had a longer operating history or a history of successfully developing and commercializing biopharmaceutical products.

In addition, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors and risks frequently experienced by clinical-stage biopharmaceutical companies in rapidly evolving fields. We also may need to transition from a company with a research focus to a company capable of supporting commercial activities. If we do not adequately address these risks and difficulties or successfully make such a transition, our business will suffer.

We have incurred significant net losses since inception, expect to continue to incur significant net losses for the foreseeable future, and may never achieve or maintain profitability.

We have incurred significant net losses since our inception, have not generated any revenue from product sales to date and have financed our operations principally through private financings. For the years ended December 31, 2023 and 2022, we incurred net losses of \$16.5 million and \$5.1 million, respectively. As of December 31, 2023, we had an accumulated deficit of \$24.4 million. Our losses have resulted principally from expenses incurred in research and development of our product candidates, from management and administrative costs and other expenses that we have incurred while building our business infrastructure, and from a loss due to the change in fair value of liability instrument. We expect that it will be several years, if ever, before we have a commercialized product and generate revenue from product sales. Even if we succeed in receiving marketing approval for, and commercializing, one or more of our product candidates, we expect that we will continue to incur substantial research and development and other expenses as we discover, develop and market additional potential product candidates.

We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase substantially if and as we:

- advance the development of our lead product candidates through clinical development, and, if approved by the FDA, commercialization;
- advance our preclinical development programs into clinical development;
- incur manufacturing costs for cell production to supply our product candidates;

- seek regulatory approvals for any of our product candidates that successfully complete clinical trials;
- increase our research and development activities to identify and develop new product candidates;
- hire additional personnel;
- expand our operational, financial and management systems;
- meet the requirements and demands of being a public company;
- invest in further development to protect and expand our intellectual property;
- establish a sales, marketing, medical affairs and distribution infrastructure to commercialize any product candidates for which we may obtain marketing approval and intend to commercialize; and
- expand our manufacturing and develop our commercialization efforts.

The net losses we incur may fluctuate significantly from period to period, such that a period-to-period comparison of our results of operations may not be a good indication of our future performance. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue. Our prior losses and expected future losses have had and will continue to have an adverse effect on our working capital and our ability to achieve and maintain profitability.

Our ability to become and remain profitable depends on our ability to generate revenue or execute other business development arrangements. We do not expect to generate significant revenue, if any, unless and until we are able to obtain regulatory approval for, and successfully commercialize, one or more product candidates we are developing or may develop. Successful commercialization will require achievement of many key milestones, including demonstrating safety and efficacy in clinical trials, obtaining regulatory approval for these product candidates, manufacturing, marketing and selling those products for which we may obtain regulatory approval, satisfying any post-marketing requirements and obtaining reimbursement for our products from private insurance or government payors. Because of the uncertainties and risks associated with these activities, we are unable to accurately and precisely predict the timing and amount of revenues, the extent of any further losses or if or when we might achieve profitability.

We may never succeed in these activities and, even if we do, we may never generate revenues that are significant enough for us to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable could impair our ability to raise capital, expand our business, diversify our product offerings or continue our operations. If we continue to incur losses as we have since our inception, investors may not receive any return on their investment and may lose their entire investment.

We will require substantial additional capital to finance our operations. If we are unable to raise such capital when needed, or on acceptable terms, we may be forced to delay, reduce and/or eliminate one or more of our research and drug development programs or future commercialization efforts.

Developing biopharmaceutical products, including conducting preclinical studies and clinical trials, is a very time-consuming, expensive and uncertain process that takes years to complete. Our operations have consumed substantial amounts of cash since inception, and we expect our expenses to increase in connection with our ongoing activities, particularly as we initiate and conduct clinical trials of, and seek marketing approval for our current product candidates and any future product candidates. Even if one or more of the product candidates that we develop is approved for commercial sale, we anticipate incurring significant costs associated with commercializing any approved product candidate. Our expenses could increase beyond expectations if we are required by the FDA, the EMA or other comparable regulatory authorities to perform clinical trials or preclinical studies in addition to those that we currently anticipate. Other unanticipated costs may also arise. In addition, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to drug sales, marketing, manufacturing and distribution. Because the design and outcome of our anticipated clinical trials are highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of any product candidate we develop. Accordingly, we will need to obtain substantial additional funding in order to maintain our continuing operations.

As of December 31, 2023, we had approximately \$9.2 million in cash and cash equivalents. Based on our current business plans, we believe that our existing capital will enable us to fund our operations through at least February 28, 2025. Our estimate as to how long we expect our existing capital to be able to continue to fund our operations is based on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Changing circumstances, some of which may be beyond our control, could cause us to consume capital significantly faster than we currently anticipate, and we may need to seek additional funds sooner than planned.

Our future funding requirements will depend on many factors, including, but not limited to:

- the initiation, progress, timeline, cost and results of our clinical trials for our product candidates;
- the initiation, progress, timeline, cost and results of additional research and preclinical studies related to pipeline development and other research programs we initiate in the future;
- the cost and timing of manufacturing activities, including our planned manufacturing scale-up activities associated with our product candidates and other programs as we advance them through preclinical and clinical development through commercialization;
- the potential expansion of our current development programs to seek new indications;
- the outcome, timing and cost of meeting regulatory requirements established by the FDA and other comparable foreign regulatory authorities;
- the cost of filing, prosecuting, defending and enforcing patent claims and other intellectual property rights, in-licensed or otherwise;
- the effect of competing technological and market developments;
- the payment of licensing fees, potential royalty payments and potential milestone payments;
- the cost of general operating expenses;
- the cost of establishing sales, marketing and distribution capabilities for any product candidates for which we may receive regulatory approval in regions where we choose to commercialize our products on our own; and
- the costs of operating as a public company.

Advancing the development of our product candidates will require a significant amount of capital. In order to fund all of the activities that are necessary to complete the development of our product candidates, we will be required to obtain further funding through equity offerings, debt financings, collaborations and licensing arrangements or other sources, which may dilute our stockholders or restrict our operating activities. Adequate additional funding may not be available to us on acceptable terms, or at all.

Our failure to raise capital as and when needed or on acceptable terms would have a negative impact on our financial condition and our ability to pursue our business strategy, and we may have to delay, reduce the scope of, suspend or eliminate one or more of our research-stage programs, clinical trials or future commercialization efforts, grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves, obtain funds through arrangement with collaborators on terms unfavorable to us or pursue merger or acquisition strategies, all of which could adversely affect the holdings or the rights of our stockholders.

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

We may seek additional capital through a variety of means, including through equity, debt financings, or other sources, including up-front payments and milestone payments from strategic collaborations. We may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences and anti-dilution protections that adversely affect your rights as a stockholder.

Such financing may also result in imposition of debt covenants, increased fixed payment obligations or other restrictions that may adversely affect our ability to conduct our business. If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or product candidates, or grant licenses on terms that are not favorable to us.

We are party to a share purchase agreement, dated November 12, 2021, with certain investors (the “GEM SPA”), pursuant to which we may elect to issue and sell to such investors, and if so elected, such investors will be obligated to purchase, for a period commencing on the first day on which our common stock trade on a principal U.S. securities exchange and ending 60 months from such date, up to \$100,000,000 worth of shares of our common stock, or the Aggregate Limit, subject to a 10% discount for the investors for shares acquired pursuant to the GEM SPA. The GEM SPA was contingent upon our achieving a public listing of our common stock, which was satisfied by the direct listing of our common stock on Nasdaq (the “Direct Listing”). However, it is possible that we may not be able to obtain access to the full amount potentially available to us under the GEM SPA due to a variety of factors outside of our control.

The GEM SPA prohibits the investors and their affiliates from:

(1) selling any of our securities during its term except for the shares that it owns or has the right to purchase pursuant to the provisions of a Draw Down Notice or the Warrant (as defined in the GEM SPA);

(2) entering into a short position, engaging in any short sales or equivalent transactions, establishing or increasing a put equivalent position or liquidating or decreasing any call equivalent position with respect to our shares, or taking, directly or indirectly, any action designed or intended to cause the manipulation of the price of our shares to facilitate the sale or resale of any of the shares; and

(3) granting any option to purchase or acquiring any right to dispose or otherwise dispose for value of any of our shares, or any securities convertible into, or exchangeable for, or warrants to purchase, any of our shares, respectively, or entering into any swap, hedge or other agreement that transfers, in whole or in part, the economic risk of ownership of our shares (except for shares that it has the right to purchase pursuant to the provisions of a Draw Down Notice or the Warrant).

The investors under the GEM SPA have further agreed to comply in all material respects with all applicable laws, rules, regulations and orders, including, without limitation, the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 415(a)(4) under the Securities Act and Regulation M and Rule 10b-5 under the Exchange Act, where applicable. GEM and GYBL have informed us that they did not engage in any short selling of our securities or other hedging activities prior to entering into the GEM SPA.

On January 31, 2024, in conjunction with the Direct Listing, we issued a draw-down notice under the GEM SPA to have GEM purchase up to 900,000 shares of our common stock at a draw-down threshold price of no less than \$15.00 per share. GEM submitted two closing notices after 65,447 shares and 76,851 shares of our common stock were purchased at \$13.50 per share. The net proceeds from these two closing notices under this draw-down were approximately \$1.8 million. We then authorized a reduction of the draw-down threshold price to no less than \$13.50 per share, and GEM submitted one additional closing notice after 84,759 shares of our common stock were purchased pursuant to the GEM SPA at \$12.15 per share for net cash proceeds of approximately \$1.0 million. Pursuant to the GEM SPA, we are required to pay the investors a commitment fee equal to 2% of the Aggregate Limit, payable in cash or shares of our common stock. The commitment fee is payable even if we do not utilize any drawdowns.

In addition, the GEM SPA required us to issue to GYBL, on our public listing date, a warrant to purchase up to the number of shares of our common stock that is equal to 4% of our total equity interests outstanding immediately after the completion of our public listing, at a price per share equal to the lesser of (i) the public offering price per share (in the case of an initial public offering) or the closing bid price per share on the public listing date (in the case of a public listing other than an initial public offering) or (ii) the quotient obtained by dividing \$700,000,000 by the total number of equity interests. With approval from our Board of Directors, we issued 1,299,783 warrants with an initial exercise price of \$21.54 per share to GYBL.

Our election to issue and sell to the investors, shares of our common stock pursuant to the GEM SPA, or the exercise of the warrant we were obligated to issue upon consummation of the Direct Listing, will result in further dilution to our existing stockholders and investors who purchase shares of our common stock in this offering.

Risks Related to Development, Regulatory Approval and Commercialization

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

We 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, such as the EMA, impose similar requirements. The time required to obtain approval by the FDA, the EMA and other comparable foreign regulatory authorities is unpredictable, typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the type, complexity and novelty of the product candidates involved. 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, which may cause delays in the approval or the decision not to approve an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional preclinical, clinical or other data. Even if we eventually complete clinical testing and receive approval of any regulatory filing for our product candidates, the FDA, the EMA and other comparable foreign regulatory authorities may approve our product candidates for a more limited indication or a narrower patient population than we originally requested. We have not submitted for, or obtained, regulatory approval for any product candidate, and it is possible that none of our existing product candidates or any product candidates we may seek to develop in the future will ever obtain regulatory approval.

Further, development of our product candidates and/or regulatory approval may be delayed for reasons beyond our control.

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

- the FDA, the EMA or other comparable foreign regulatory authorities may disagree with the design, implementation or results of our clinical trials;
- the FDA, the EMA or other comparable foreign regulatory authorities may determine that our product candidates are not safe and effective, only moderately effective or have undesirable or unintended side effects, toxicities or other characteristics that preclude our obtaining marketing approval or prevent or limit commercial use;

- the population studied in the clinical trial may not be sufficiently broad or representative to assure efficacy and safety in the full population for which we seek approval;
- the FDA, the EMA or other comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a Biologics License Application, or BLA, or other submission or to obtain regulatory approval in the United States or elsewhere;
- we may be unable to demonstrate to the FDA, the EMA or other comparable foreign regulatory authorities that a product candidate's risk-benefit ratio for its proposed indication is acceptable;
- the FDA, the EMA or other comparable foreign regulatory authorities may fail to approve our manufacturing processes, test procedures and specifications or facilities or those of third-party manufacturers with which we contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA, the EMA or other comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

This lengthy, uncertain approval process, as well as the unpredictability of the results of clinical trials, may result in our failing to obtain regulatory approval to market any of our product candidates, which would significantly harm our business, results of operations and prospects. In addition, the FDA, the EMA or comparable foreign regulatory authorities may change their policies, adopt additional regulations or revise existing regulations or take other actions, which may prevent or delay approval of our future product candidates under development on a timely basis. Such policy or regulatory changes could impose additional requirements upon us that could delay our ability to obtain approvals, increase the costs of compliance or restrict our ability to maintain any marketing authorizations we may have obtained.

We may encounter substantial delays in completing, or ultimately be unable to complete, the development and commercialization of our product candidates.

Before obtaining marketing approval from the FDA, the EMA or other comparable foreign regulatory authorities for the sale of our product candidates, we must complete preclinical development and extensive clinical trials to demonstrate the safety and efficacy of our product candidates. Clinical testing is expensive, difficult to design and implement, can take many years to complete and its ultimate outcome is uncertain. A failure of one or more clinical trials can occur at any stage of the process. The outcome of preclinical studies and early-stage clinical trials may not be predictive of the success of later clinical trials.

We do not know whether our future clinical trials will begin on time or enroll patients on time, or whether our ongoing and/or future clinical trials will be completed on schedule or at all. Clinical trials can be delayed for a variety of reasons, including delays related to:

- the FDA, the EMA or other comparable foreign regulatory authorities disagreeing as to the design or implementation of our clinical trials;
- obtaining regulatory authorizations to commence a trial or reaching a consensus with regulatory authorities on trial design;
- any failure or delay in reaching an agreement with 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 approval from one or more independent institutional review boards, or IRBs;
- IRBs refusing to approve, suspending or terminating the trial at an investigational site, precluding enrollment of additional subjects, or withdrawing their approval of the trial;

- delays in enrollment due to travel or quarantine policies, or other factors related pandemics or other events outside our control;
- changes to clinical trial protocol;
- clinical sites deviating from trial protocol or dropping out of a trial;
- manufacturing sufficient quantities of a product candidate or obtaining sufficient quantities of combination therapies for use in clinical trials;
- subjects failing to enroll or remain in our trial at the rate we expect, or failing to return for post- treatment follow-up;
- subjects choosing an alternative treatment for the indication for which we are developing our product candidates, or participating in competing clinical trials;
- lack of adequate funding to continue the clinical trial;
- subjects experiencing severe or unexpected drug-related adverse effects;
- occurrence of serious adverse events in trials of the same class of agents conducted by other companies;
- selection of clinical endpoints that require prolonged periods of clinical observation or analysis of the resulting data;
- a facility manufacturing our product candidates or any of their components being ordered by the FDA, the EMA or comparable foreign regulatory authorities to temporarily or permanently shut down due to violations of cGMP regulations or other applicable requirements, or infections or cross-contaminations of product candidates in the manufacturing process;
- any changes to our manufacturing process that may be necessary or desired;
- third-party clinical investigators losing the licenses or permits necessary to perform our clinical trials, not performing our clinical trials on our anticipated schedule or consistent with the clinical trial protocol, GCP or other regulatory requirements;
- third-party contractors not performing data collection or analysis in a timely or accurate manner; or
- third-party contractors becoming debarred or suspended or otherwise penalized by the FDA, the EMA or other government or regulatory authorities for violations of regulatory requirements, in which case we may need to find a substitute contractor, and we may not be able to use some or all of the data produced by such contractors in support of our marketing applications.

Conducting clinical trials in foreign countries, as we may do for our product candidates, presents additional risks that may delay completion of our clinical trials. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks relevant to such foreign countries.

Additionally, if the results of our clinical trials are inconclusive or if there are safety concerns or serious adverse events associated with our product candidates, we may:

- be delayed in obtaining marketing approval, if at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or safety warnings;
- be required to perform additional clinical trials to support approval or be subject to additional post-marketing testing requirements;
- be subject to the addition of labeling statements, such as warnings or contraindications;
- be sued; or
- experience damage to our reputation.

Our development costs will also increase if we experience delays in testing or obtaining marketing approvals. We do not know whether any of our preclinical studies or clinical trials will begin as planned, need to be restructured or be completed on schedule, if at all. Any delay in, or termination of, our clinical trials will delay the submission of a BLA to the FDA or similar applications with comparable foreign regulatory authorities and, ultimately, our ability to commercialize our product candidates, if approved, and generate product revenue. Even if our clinical trials are completed as planned, we cannot be certain that their results will support our claims for differentiation or the effectiveness or safety of our product candidate. The FDA has substantial discretion in the review and approval process and may disagree that our data support the claims we propose.

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, the EMA or other comparable foreign regulatory authorities. The FDA, the EMA or other 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, the EMA or other 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, the EMA or other 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 experience delays in the completion of, or termination of, any clinical trial of our product candidates, the commercial prospects of our product candidates will be harmed, and our ability to generate product revenues from any of these product candidates will be delayed. Moreover, any delays in completing our clinical trials will increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues.

In addition, many of the factors that cause, or lead to, termination or suspension of, or a delay in the commencement or completion of, clinical trials may also ultimately lead to the denial of regulatory approval of a product candidate. Any delays to our clinical trials that occur as a result could shorten any period during which we may have the exclusive right to commercialize our product candidates and our competitors may be able to bring products to market before we do, and the commercial viability of our product candidates could be significantly reduced. Any of these occurrences may harm our business, financial condition and prospects significantly.

The outcome of preclinical studies or early clinical trials may not be predictive of the success of later clinical trials, and the results of our clinical trials may not satisfy the requirements of the FDA, the EMA or other comparable foreign regulatory authorities.

Positive results from preclinical studies and early clinical trials do not mean that future clinical trials will be successful. Failure can occur at any time during the clinical trial process. We do not know whether any of our product candidates will perform in current or future clinical trials as they have performed in preclinical studies and early clinical trials. Product candidates in later-stage clinical trials may fail to demonstrate sufficient safety and efficacy to the satisfaction of the FDA, the EMA and other comparable foreign regulatory authorities despite having progressed through preclinical studies and early-stage clinical trials.

In some instances, there can be significant variability in safety and efficacy results between different clinical trials of the same product candidate due to numerous factors, including changes in trial protocols, differences in size and type of the patient populations, differences in and adherence to the dosing regimen and other trial protocols and the rate of dropout among clinical trial participants. Patients treated with our product candidates may also be undergoing surgical, radiation and chemotherapy treatments and may be using other approved products or investigational new drugs, which can cause side effects or adverse events that are unrelated to our product candidate. As a result, assessments of efficacy can vary widely for a particular patient, and from patient to patient and site to site within a clinical trial. This subjectivity can increase the uncertainty of, and adversely impact, our clinical trial outcomes. We do not know whether any clinical trials we may conduct will demonstrate consistent or adequate efficacy and safety sufficient to obtain marketing approval to market our product candidates. Most product candidates that begin clinical trials are never approved by regulatory authorities for commercialization.

Additionally, some of our planned clinical trials may utilize an “open-label” trial design. An “open-label” clinical trial is one where both the patient and investigator know whether the patient is receiving either the investigational product candidate or an existing approved pharmaceutical or placebo. Most typically, open-label clinical trials test only the investigational product candidate and sometimes may do so at different dose levels. Open-label clinical trials are subject to various limitations that may exaggerate any therapeutic effect as patients in open-label clinical trials are aware when they are receiving treatment. Open-label clinical trials may be subject to a “patient bias” where patients perceive their symptoms to have improved merely due to their awareness of receiving an experimental treatment. In addition, open-label clinical trials may be subject to an “investigator bias” where those assessing and reviewing the physiological outcomes of the clinical trials are aware of which patients have received treatment and may interpret the information of the treated group more favorably given this knowledge. The results from an open-label trial may not be predictive of future clinical trial results with any of our product candidates for which we include an open-label clinical trial when studied in a controlled environment with a placebo or active control.

Moreover, preclinical and clinical data are often susceptible to varying interpretations and analyses and many companies that believed their product candidates performed satisfactorily in preclinical studies or clinical trials nonetheless failed to obtain FDA, EMA or comparable foreign regulatory authority approval. We cannot guarantee that the FDA, the EMA or comparable foreign regulatory authorities will interpret trial results as we do, and more trials could be required before we are able to submit applications seeking approval of our product candidates. This is particularly true for clinical trials in rare diseases, where the very small patient population makes it difficult to conduct two traditional, adequate and well-controlled studies, and therefore the FDA, the EMA or comparable foreign regulatory authorities are often required to exercise flexibility in approving therapies for such diseases. To the extent that the results of the trials are not satisfactory to the FDA, the EMA or comparable foreign regulatory authorities for support of a marketing application, we may be required to expend significant resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates. Even if regulatory approval is secured for any of our product candidates, the terms of such approval may limit the scope and use of our product candidate, which may also limit its commercial potential. Furthermore, the approval policies or regulations of the FDA, the EMA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval, which may lead to the FDA, the EMA or comparable foreign regulatory authorities delaying, limiting or denying approval of our product candidates.

Interim, topline and preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publicly disclose interim, preliminary or topline data from our 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 study or 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 interim, topline or preliminary 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. Interim, preliminary and topline data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, interim, topline and preliminary data should be viewed with caution until the final data are available. Adverse differences between preliminary, topline 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 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 material or otherwise appropriate information to include in our disclosure. If the interim, topline or preliminary 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, our product candidates may be harmed, which could harm our business, operating results, prospects or financial condition.

Our current or future product candidates may cause adverse events, toxicities or other undesirable side effects when used alone or in combination with other approved products or investigational new drugs that may result in a safety profile that could inhibit regulatory approval, prevent market acceptance, limit their commercial potential or result in significant negative consequences.

As is the case with biopharmaceuticals generally, it is likely that there may be side effects and adverse events associated with our product candidates' use. Results of our clinical trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics. Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA, the EMA or comparable foreign regulatory authorities. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly.

If our product candidates are associated with undesirable side effects or have unexpected characteristics in preclinical studies or clinical trials when used alone or in combination with other approved products or investigational new drugs we may need to interrupt, delay or abandon their development or limit development to more narrow uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. Treatment-related side effects could also affect patient recruitment or the ability of enrolled subjects to complete the trial, or result in potential product liability claims. Any of these occurrences may prevent us from achieving or maintaining market acceptance of the affected product candidate and may harm our business, financial condition and prospects significantly.

Patients in our ongoing and planned clinical trials in the future may suffer significant adverse events or other side effects not observed in our preclinical studies or previous clinical trials. Some of our product candidates may be used as chronic therapies or be used in pediatric populations, for which safety concerns may be particularly scrutinized by regulatory agencies. In addition, if our product candidates are used in combination with other therapies, our product candidates may exacerbate adverse events associated with the therapy. Patients treated with our product candidates may also be undergoing surgical, radiation or chemotherapy treatments, which can cause side effects or adverse events that are unrelated to our product candidate but may still impact the success of our clinical trials. The inclusion of critically ill patients in our clinical trials may result in deaths or other adverse medical events due to other therapies or medications that such patients may be using or due to the gravity of such patients' illnesses.

If significant adverse events or other side effects are observed in any of our current or future clinical trials, we may have difficulty recruiting patients to the clinical trials, patients may drop out of our trials, or we may be required to abandon the trials or our development efforts of that product candidate altogether. We, the FDA, the EMA, other comparable regulatory authorities or an IRB may suspend clinical trials of a product candidate at any time for various reasons, including a belief that subjects in such trials are being exposed to unacceptable health risks or adverse side effects.

Additionally, if any of our product candidates receives regulatory approval and becomes a product, and we or others later identify undesirable side effects caused by such product, a number of potentially significant negative consequences could result. For example, the FDA could require us to adopt a Risk Evaluation and Mitigation Strategy, or REMS, to ensure that the benefits of treatment with such product 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 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. Other potentially significant negative consequences include that:

- we may be forced to suspend marketing of that product, or decide to remove the product from the marketplace;
- regulatory authorities may withdraw or change their approvals of that product;
- regulatory authorities may require additional warnings on the label or limit access of that product to selective specialized centers with additional safety reporting and with requirements that patients be geographically close to these centers for all or part of their treatment;
- we may be required to create a medication guide outlining the risks of the product for patients, or to conduct post-marketing studies;
- we may be required to change the way the product is administered;
- we could be subject to fines, injunctions, or the imposition of criminal or civil penalties, or be sued and held liable for harm caused to subjects or patients; and
- the product may become less competitive, and our reputation may suffer.

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

Even if approved, our product candidates may not achieve adequate market acceptance among physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

Even if our product candidates receive regulatory approval and become a product, they may not gain adequate market acceptance among physicians, patients, healthcare payors and others in the medical community. The degree of market acceptance of any of our approved product candidates will depend on a number of factors, including:

- the efficacy and safety profile as demonstrated in clinical trials compared to alternative treatments;
- the timing of market introduction of the product as well as competitive products;
- the clinical indications for which the product is approved;
- restrictions on the use of our product, such as boxed warnings or contraindications in labeling, or a REMS, if any, which may not be required of alternative treatments and competitor products;
- the potential and perceived advantages of products over alternative treatments;
- the cost of treatment in relation to alternative treatments;

- the availability of coverage and adequate reimbursement, as well as pricing, by third-party payors, including government authorities;
- relative convenience and ease of administration;
- the willingness of the target patient population to try new therapies and of physicians to prescribe these therapies;
- the effectiveness of sales and marketing efforts;
- unfavorable publicity relating to our products or similar approved products or product candidates in development by third parties; and
- the approval of other new therapies for the same indications.

If any of our product candidates is approved but does not achieve an adequate level of acceptance by physicians, hospitals, healthcare payors and patients, we may not generate or derive sufficient revenue from that product candidate and our financial results could be negatively impacted.

Our refrigerated product candidates require specific storage, handling and administration at the clinical sites.

Our refrigerated drug product candidates must be stored at low temperatures in specialized refrigerated containers until immediately prior to use. For administration, the drug product container must be carefully removed from storage, warmed to room temperature and inverted to place cells into suspension prior to drawing the product into syringes. The handling, warming and administration of the cell therapy product must be performed according to specific instructions. Failure to correctly handle the product, follow the instructions for warming and administration and/or failure to administer the product within the specified period post-warming could negatively impact the efficacy and or safety of the product.

Because cell therapy is novel and the regulatory landscape that governs any cell therapy product candidates we may develop is rigorous, complex, uncertain and subject to change, we cannot predict the time and cost of obtaining regulatory approval, if we receive it at all, for any product candidates we may develop. At the moment, only a small number of cell therapy products have been approved in the United States and the European Union.

The regulatory requirements that will govern any novel cell therapy product candidates we develop are not entirely clear and are subject to change. Within the broader genetic medicine field, very few therapeutic products have received marketing authorization from the FDA or the EMA. Even with respect to more established products that fit into the categories of gene therapies or cell therapies, the regulatory landscape is still developing. Regulatory requirements governing cell therapy products have changed frequently and will likely continue to change in the future. Moreover, there is substantial overlap in those responsible for regulation of existing cell therapy products. For example, in the United States, the FDA has established the Office of Tissues and Advanced Therapies within its Center for Biologics Evaluation and Research to consolidate the review of cell therapy and related products. Although the FDA has approved other cell-based therapies, there is no assurance that these previous approvals will affect the FDA's review of our product candidates.

Our cell therapy product candidates will need to meet safety and efficacy standards applicable to any new biologic under the regulatory framework administered by the FDA. In addition to FDA oversight and oversight by IRBs, under the National Institutes of Health Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules, or NIH Guidelines, cell therapy clinical trials are also subject to review and oversight by an Institutional Biosafety Committee, or 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. While the NIH Guidelines are not mandatory unless the research in question is being conducted at or sponsored by institutions receiving National Institutes of Health, or 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. Although the FDA decides whether individual cell therapy protocols may proceed, the review process and determinations of other reviewing bodies can impede or delay the initiation of a clinical trial, even if the FDA has reviewed the trial and approved its initiation.

The same applies in the European Union. The EMA's Committee for Advanced Therapies, or CAT, is responsible for assessing the quality, safety, and efficacy of advanced-therapy medicinal products. Advanced-therapy medicinal products include cell therapy medicines, 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 cell therapy medicinal candidate that is submitted to the EMA. In the European Union, the development and evaluation of a cell therapy 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 cell therapy products and require that we comply with these new guidelines. As a result, the procedures and standards applied to cell therapy products may be applied to any cell therapy product candidate we may develop, but that remains uncertain at this point.

Adverse developments in preclinical studies or clinical trials conducted by others in the field of cell therapy and cell regulation products 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 cell therapy technologies, either of which could harm our business. In addition, the clinical trial requirements of the FDA, the EMA and other regulatory authorities and the criteria these regulators use to determine the safety and efficacy of a product candidate vary substantially according to the type, complexity, novelty, and intended use and market of the potential products. The regulatory approval process for product candidates such as ours can be more expensive and take longer than for other, better known, or more extensively studied pharmaceutical or other product candidates. Further, as we are developing novel potential treatments for diseases in which, in some cases, there is little clinical experience with potential new endpoints and methodologies, there is heightened risk that the FDA, the EMA or other 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. In addition, we may not be able to identify or develop appropriate animal disease models to enable or support planned clinical development. Any natural history studies that we may conduct or rely upon in our clinical development may not be accepted by the FDA, the EMA or other regulatory authorities. Regulatory agencies administering existing or future regulations or legislation may not allow production and marketing of products utilizing cell therapy technology in a timely manner or under technically or commercially feasible conditions. In addition, regulatory action or private litigation could result in expenses, delays or other impediments to our research programs or the commercialization of resulting products. Further, approvals by one regulatory agency may not be indicative of what other regulatory agencies may require for approval.

The regulatory review committees and advisory groups described above and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional preclinical studies or clinical trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of these product candidates, or lead to significant post-approval limitations or restrictions. As we advance our research programs and develop future product candidates, we will be required to consult with these regulatory and advisory groups and to comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of any product candidates we identify and develop. These additional processes may result in a review and approval process that is longer than we otherwise would have expected. Delays as a result of an increased or lengthier regulatory approval process or further restrictions on the development of our product candidates can be costly and could negatively impact our ability to complete clinical trials and commercialize our current and future product candidates in a timely manner, if at all.

We may be unable to obtain U.S. or foreign regulatory approvals and, as a result, may be unable to commercialize our product candidates.

Our product candidates are subject to extensive governmental regulations relating to, among other things, research, testing, development, manufacturing, safety, efficacy, approval, recordkeeping, reporting, labeling, storage, packaging, advertising and promotion, pricing, marketing and distribution of drugs. Rigorous preclinical studies and clinical trials and an extensive regulatory approval process must be successfully completed in the United States and in many foreign jurisdictions before a new drug can be marketed. Satisfaction of these and other regulatory requirements is costly, time-consuming, uncertain and subject to unanticipated delays. We cannot provide any assurance that any product candidate we may develop will progress through required clinical testing and obtain the regulatory approvals necessary for us to begin selling them.

We have not conducted, managed or completed large-scale or pivotal clinical trials nor managed the regulatory approval process with the FDA, the EMA or any other regulatory authority with respect to our current product candidates. The time required to obtain approvals from the FDA and other regulatory authorities is unpredictable and requires successful completion of extensive clinical trials which typically takes many years, depending upon the type, complexity and novelty of the product candidate. The standards that the FDA and its foreign counterparts use when evaluating clinical trial data can and often change during drug development, which makes it difficult to predict with any certainty how they will be applied. We may also encounter unexpected delays or increased costs due to new government regulations, including future legislation or administrative action, or changes in FDA policy during the period of drug development, clinical trials and FDA regulatory review.

Any delay or failure in seeking or obtaining required approvals would have a material and adverse effect on our ability to generate revenue from the particular product candidate for which we are developing and seeking approval. Furthermore, any regulatory approval to market a product candidate may be subject to significant limitations on the approved uses or indications for which we may market the product candidate or the labeling or other restrictions. In addition, the FDA has the authority to require a REMS as part of approving an NDA or BLA, or after approval, which may impose further requirements or restrictions on the distribution or use of an approved product candidate. These requirements or restrictions might include limiting prescribing to certain physicians or medical centers that have undergone specialized training, limiting treatment to patients who meet certain safe-use criteria and requiring treated patients to enroll in a registry. These limitations and restrictions may significantly limit the size of the market for the product candidate and affect reimbursement by third-party payors.

We are also subject to numerous foreign regulatory requirements governing, among other things, the conduct of clinical trials, manufacturing and marketing authorization, pricing and third-party reimbursement. The foreign regulatory approval process varies among countries, and generally includes all of the risks associated with FDA approval described above as well as risks attributable to the satisfaction of local regulations in foreign jurisdictions. Moreover, the time required to obtain approval may differ from that required to obtain FDA approval.

We may develop our current and future product candidates in combination with other therapies, which exposes us to additional risks, and certain of our product candidates are regulated as combination products.

We may develop our current and future product candidates in combination with one or more other approved or unapproved therapies to treat skin and connective tissue diseases or other diseases. We may also develop certain product candidates as biologic/drug combination products. Additional time may be required to obtain regulatory approval for our product candidates because they are combination products. Our product candidates that are biologic/drug combination products require coordination within the FDA and similar foreign regulatory agencies for review of their biologic and drug components. Although the FDA and similar foreign regulatory agencies have systems in place for the review and approval of combination products such as ours, we may experience delays in the development and commercialization of our product candidates due to regulatory timing constraints and uncertainties in the product development and approval process.

In addition, even if any product candidate we develop were to receive marketing approval or be commercialized for use in combination with other existing therapies, we would continue to be subject to the risks that the FDA, the EMA or comparable foreign regulatory authorities could revoke approval of the therapy used in combination with our product or that safety, efficacy, manufacturing or supply issues could arise with any of those existing therapies. If the therapies we use in combination with our product candidates are replaced as the standard of care for the indications we choose for any of our product candidates, the FDA, the EMA or comparable foreign regulatory authorities may require us to conduct additional clinical trials. The occurrence of any of these risks could result in our own product candidates, if approved, being removed from the market or being less successful commercially.

We also may choose to evaluate our current product candidates or any future product candidates in combination with one or more therapies that have not yet been approved for marketing by the FDA, the EMA or comparable foreign regulatory authorities. We will not be able to market and sell our product candidates we develop in combination with an unapproved therapy for a combination indication if that unapproved therapy does not ultimately obtain marketing approval either alone or in combination with our product candidate. In addition, unapproved therapies face the same risks described with respect to our product candidates currently in development and clinical trials, including the potential for serious adverse effects, delay in their clinical trials and lack of FDA approval.

If the FDA, the EMA or comparable foreign regulatory authorities do not approve these other products or revoke their approval of, or if safety, efficacy, quality, manufacturing or supply issues arise with, the products we choose to evaluate in combination with our product candidates we develop, we may be unable to obtain approval of or market such combination therapy.

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

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, each as amended, or collectively, the ACA, includes a subtitle called the Biologics Price Competition and Innovation Act of 2009, or BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed reference biological product. 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 the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement BPCIA may be fully adopted by the FDA, any such processes could have an adverse effect on the future commercial prospects for our biological products.

There is a risk that any of our product candidates approved as a biological product under a BLA would not qualify for the 12-year period of exclusivity or that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider our product candidates to be reference products for competing products, potentially creating the opportunity for generic competition sooner than anticipated. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of litigation. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing. If competitors are able to obtain marketing approval for biosimilars referencing our candidates, if approved, our products may become subject to competition from such biosimilars, with the attendant competitive pressure and potential adverse consequences.

We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs, therapeutic platforms and product candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other therapeutic platforms or product candidates or for other indications that later prove to have greater commercial potential or a greater likelihood of success. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs, therapeutic platforms and product candidates for specific indications may not yield any commercially viable products. 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 royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights.

Risks Related to Our Business

Our company has limited experience in designing clinical trials and may experience delays or unexpected difficulties in obtaining regulatory approval for our current and future product candidates.

We have limited experience in designing clinical trials and may be unable to design and execute a clinical trial to support marketing approval. We cannot be certain that our planned clinical trials or any future clinical trials will be successful. It is possible that the FDA may refuse to accept any or all of our planned BLAs for substantive review or may conclude after review of our data that our application is insufficient to obtain regulatory approval for any product candidates. If the FDA does not approve any of our planned BLAs, it may require that we conduct additional costly clinical trials, preclinical studies or manufacturing validation studies before it will reconsider our applications. Depending on the extent of these or any other FDA-required studies, approval of any BLA or other application that we submit may be significantly delayed, possibly for several years, or may require us to expend more resources than we have available. Any failure or delay in obtaining regulatory approvals would prevent us from commercializing our product candidates, generating revenues and achieving and sustaining profitability. It is also possible that additional studies, if performed and completed, may not be considered sufficient by the FDA to approve any BLA or other application that we submit. If any of these outcomes occur, we may be forced to abandon the development of our product candidates, which would materially adversely affect our business and could potentially cause us to cease operations. We face similar risks for our applications in foreign jurisdictions.

We intend to identify and develop novel cell therapy product candidates, which makes it difficult to predict the time, cost and potential success of product candidate development.

Our strategy is to identify, develop and commercialize cell therapy product candidates using our proprietary fibroblast technology, which involves collecting skin biopsies from donor patients, isolating cells and expanding them in culture. Our future success depends on the successful development of these novel therapeutic approaches. To date, no fibroblast therapy products have been approved. In addition, there have been a few number of clinical trials involving fibroblasts as compared to other, more conventional forms of therapy.

The sizes of the markets for our product candidates are estimates, and these markets may be smaller than estimated.

The estimates in this prospectus of the annual addressable markets for our product candidates are based on a number of third-party estimates. While we believe the assumptions and the data underlying the estimates are reasonable, these assumptions and estimates may not be correct and the conditions supporting the assumptions or estimates may change at any time, thereby reducing the predictive accuracy of these underlying factors. As a result, the estimates of the annual addressable market for our product candidates may prove to be incorrect.

Our long-term prospects depend in part upon discovering, developing and commercializing additional product candidates, which may fail in development or suffer delays that adversely affect their commercial viability.

Our future operating results are dependent on our ability to successfully discover, develop, obtain regulatory approval for and commercialize product candidates beyond those we currently have in clinical development. A product candidate can unexpectedly fail at any stage of preclinical or clinical development. The historical failure rate for product candidates is high due to risks relating to safety, efficacy, clinical execution, changing standards of medical care and other unpredictable variables. The results from preclinical studies or early clinical trials of a product candidate may not be predictive of the results that will be obtained in later stage clinical trials of the product candidate.

The success of other product candidates we may develop will depend on many factors, including the following:

- generating sufficient data to support the initiation or continuation of clinical trials;
- obtaining regulatory permission to initiate clinical trials;
- contracting with the necessary parties to conduct clinical trials;
- successful enrollment of patients in, and the completion of, clinical trials on a timely basis;
- the timely manufacture of sufficient quantities of the product candidate and other key materials needed for use in clinical trials; and
- adverse events in the clinical trials.

Even if we successfully advance any other product candidates into clinical development, their success will be subject to all of the clinical, regulatory and commercial risks described elsewhere in this “*Risk Factors*” section. Accordingly, we cannot assure you that we will ever be able to discover, develop, obtain regulatory approval of, commercialize or generate significant revenue from our product candidates.

We have never commercialized a fibroblast cell-based therapy product candidate before and may lack the necessary expertise, personnel and resources to successfully commercialize any product candidates, if approved, on our own or together with suitable collaborators.

We have never commercialized a fibroblast cell-based therapy product candidate, and we currently have no sales force, marketing or distribution capabilities. To achieve commercial success for our current product candidates, which we may license to others, we will rely on the assistance and guidance of those collaborators. For any approved product candidates for which we retain commercialization rights, we will have to develop our own sales, marketing and supply organization or outsource these activities to a third party.

Factors that may affect our ability to commercialize our product candidates on our own include recruiting and retaining adequate numbers of effective sales and marketing personnel, obtaining access to or persuading adequate numbers of physicians to prescribe our product candidates and other unforeseen costs associated with creating an independent sales and marketing organization. Developing a sales and marketing organization will be expensive and time-consuming and could delay the launch of our product candidates, if approved. We may not be able to build an effective sales and marketing organization. If we are unable to build our own distribution and marketing capabilities or to find suitable partners for the commercialization of our product candidates, we may not generate revenues from them or be able to reach or sustain profitability.

We face significant competition, and if our competitors develop and market technologies or products more rapidly than we do or that are more effective, safer or less expensive than the product candidates we develop, our commercial opportunities will be negatively impacted.

The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary and novel products and product candidates. Our competitors have developed, are developing or may develop products, product candidates and processes competitive with our product candidates. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future. We believe that a significant number of products are currently under development, and may become commercially available in the future, for the treatment of conditions for which we may attempt to develop product candidates. See “*Business—Competition*” for additional details. In addition, our products may need to compete with off-label drugs used by physicians to treat the indications for which we seek approval. This may make it difficult for us to replace existing therapies with our products.

Many current and potential competitors have significantly greater financial, manufacturing, marketing, drug development, technical and human resources and commercial expertise than we do. Large pharmaceutical and biotechnology companies, in particular, have extensive experience in clinical testing, obtaining regulatory approvals, recruiting patients and manufacturing biotechnology products. These companies also have significantly greater research and marketing capabilities than we do and may also have products that have been approved or are in late stages of development, and collaborative arrangements in our target markets with leading companies and research institutions. Established pharmaceutical and biotechnology companies may also invest heavily to accelerate discovery and development of novel compounds or to in-license novel compounds that could make the product candidates that we develop obsolete. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies, as well as in acquiring technologies complementary to, or necessary for, our programs. As a result, our competitors may succeed in obtaining approval from the FDA, the EMA or other comparable foreign regulatory authorities or in discovering, developing and commercializing products in our field before we do.

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 effects, are more convenient, have a broader label, are marketed more effectively, are reimbursed or are less expensive than any product candidates that we may develop. Our competitors also may obtain marketing approval from the FDA, the EMA or other comparable foreign regulatory authorities 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. Even if the product candidates we develop achieve marketing approval, they may be priced at a significant premium over competitive products if any have been approved by then, resulting in reduced competitiveness. Technological advances or products developed by our competitors may render our technologies or product candidates obsolete, less competitive or uneconomical. If we are unable to compete effectively, our opportunity to generate revenue from the sale of any products we may develop, if approved, could be adversely affected.

We will incur increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives. We will be subject to financial reporting and other requirements for which our accounting and other management systems and resources may not be adequately prepared.

As a public company, and particularly after we are no longer an emerging growth company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. In addition, the federal securities laws, including the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, and rules and regulations subsequently implemented by the SEC and Nasdaq have imposed various requirements on public companies, including requirements to file annual, quarterly, and event driven reports with respect to their business and financial condition, and to establish and maintain effective disclosure and financial controls and corporate governance practices. These rules and regulations will increase our legal and financial compliance costs, make certain activities more time-consuming and costly, and require our management and other personnel to devote a substantial amount of time to compliance initiatives.

Despite our best efforts, we may not be able to produce reliable financial statements or file such financial statements as part of a periodic report in a timely manner with the SEC or comply with Nasdaq listing requirements. We also expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance.

Pursuant to Section 404 of the Sarbanes-Oxley Act, we will be required to furnish a report by our management on our internal control over financial reporting, including an attestation report on internal control over financial reporting issued by our independent registered public accounting firm, beginning with the first full year after we become a public company. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with Section 404 of the Sarbanes-Oxley Act, we will be engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. We will need to continue to dedicate internal resources, potentially engage outside consultants, adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that neither we nor our independent registered public accounting firm will be able to conclude within the prescribed timeframe that our internal control over financial reporting is effective as required by Section 404 of the Sarbanes-Oxley Act. This could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements. We could also become subject to investigations by the SEC or other regulatory authorities, which could require additional financial and management resources. See the risk factor below captioned “*We have identified a material weakness in our internal control over financial reporting due to lack of segregation of duties. Failure to maintain effective internal control over financial reporting could cause our investors to lose confidence in us and adversely affect the market price of our common stock. If our internal controls over financial reporting are not effective, we may not be able to accurately report our financial results or prevent fraud.*”

As a public company, we are required to maintain disclosure controls and procedures. Disclosure controls and procedures means our controls and other procedures that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the rules and forms of the SEC. We do not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all errors and all fraud. We believe a control system, no matter how well-designed and operated, can provide only reasonable, not absolute, assurance that the control system’s objectives will be met. Due to the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and any design may not succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

We have identified a material weakness in our internal control over financial reporting due to lack of segregation of duties. Failure to maintain effective internal control over financial reporting could cause our investors to lose confidence in us and adversely affect the market price of our common stock. If our internal controls over financial reporting are not effective, we may not be able to accurately report our financial results or prevent fraud.

During the preparation of our financial statements for the fiscal year ended December 31, 2023 and 2022, our management identified a material weakness in our internal control over financial reporting due to a lack of segregation of duties. A material weakness is defined as a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

Specifically, our management identified a deficiency in our internal controls within the financial reporting function that resulted from an ineffective design and implementation of controls over proper segregation of duties for the period of time covered by our financial statements prior to our Chief Financial Officer joining us in June 2022 when all financial functions were handled by a single individual, and afterward, through December 31, 2023, due to a limited number of individuals. Based upon such evaluation, and due to the material weakness identified, our principal executive officer and principal financial and accounting officer have concluded that our disclosure controls and procedures were not effective.

With the addition of our Chief Financial Officer and the changes made to our accounting and financial reporting processes and internal controls during the last half of fiscal year 2022 and through December 31, 2023, we have strengthened our internal controls and will continue to add staff, evaluate segregation of duties, and implement initiatives to improve our internal controls over financial reporting as we grow. However, the implementation of these initiatives may not fully address the material weakness in our internal control over financial reporting and we cannot assure you that we will not identify other material weaknesses or deficiencies, which could negatively impact our results of operations in future periods.

Risks Relating to Our Dependence on Third Parties

We rely, and expect to continue to rely, on third parties, including independent clinical investigators and CROs, to conduct certain aspects of our preclinical studies and clinical trials. If these third parties do not successfully carry out their contractual duties, comply with applicable regulatory requirements or meet expected deadlines, we may not be able to obtain regulatory approval for or commercialize our product candidates and our business could be adversely harmed.

We have relied upon and plan to continue to rely upon third parties, including independent clinical investigators and third-party CROs, to conduct certain aspects of our preclinical studies and clinical trials and to monitor and manage data for our ongoing preclinical and clinical programs. We rely on these parties for execution of our preclinical studies and clinical trials, and control only certain aspects of their activities. Nevertheless, we are responsible for ensuring that each of our studies and trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on these third parties does not relieve us of our regulatory responsibilities. We, our third-party contractors and CROs are required to comply with GCP requirements, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for all of our product candidates in clinical development. Regulatory authorities enforce these GCPs through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of these third parties or our CROs fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA, the EMA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP regulations. In addition, our clinical trials must be conducted with products manufactured under cGMP regulations. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be adversely affected if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

Further, there is no guarantee that any such CROs, investigators or other third parties on which we rely will devote adequate time and resources to our development activities or perform as contractually required. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other product development activities, which could affect their performance on our behalf. If independent investigators or CROs fail to devote sufficient resources to the development of our product candidates, or if CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates. Consequently, our results of operations and the commercial prospects for our product candidates would be harmed, our costs could increase and our ability to generate revenues could be delayed or halted entirely.

Our CROs have the right to terminate their agreements with us in the event of an uncured material breach. In addition, some of our CROs have an ability to terminate their respective agreements with us if it can be reasonably demonstrated that the safety of the subjects participating in our clinical trials warrants such termination, if we make a general assignment for the benefit of our creditors or if we are liquidated.

If any of our relationships with these third-party CROs terminate, we may not be able to enter into arrangements with alternative CROs or to do so on commercially reasonable terms. Switching or adding additional CROs involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Additionally, CROs may lack the capacity to absorb higher workloads or take on additional capacity to support our needs. Though we carefully manage our relationships with our CROs, there can be no assurance that we will not encounter similar challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

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

Our product candidate development programs and the potential commercialization of our product candidates will require substantial additional cash to fund expenses. We may continue to seek to selectively form collaborations to expand our capabilities, potentially accelerate research and development activities and provide for commercialization activities by third parties. Any of these relationships may require us to incur non-recurring and other charges, increase our near and long-term expenditures, issue securities that dilute our existing stockholders, or disrupt our management and business.

We would face significant competition in seeking appropriate collaborators and the negotiation process is time-consuming and complex. 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 the design or results of clinical trials, the likelihood of approval by the FDA, the EMA or comparable foreign regulatory authorities, 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, the existence of uncertainty with respect to our ownership of intellectual property and industry and market conditions generally. The potential collaborator may also consider alternative product candidates or technologies for similar indications that may be available to collaborate on and whether such collaboration could be more attractive than the one with us for our product candidate. Further, we may not be successful in our efforts to establish a collaboration or other alternative arrangements for future product candidates because they may be deemed to be at too early of a stage of development for collaborative effort and third parties may not view them as having the requisite potential to demonstrate safety and efficacy.

In addition, mergers among large biopharmaceutical companies may result in a reduced number of potential future collaborators. Even if we are successful in entering into a collaboration, the terms and conditions of that collaboration may restrict us from entering into future agreements on certain terms with potential collaborators.

If and when we seek to enter into collaborations, we may not be able to negotiate collaborations on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to curtail the development of a product candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund 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. If we do not have sufficient funds, we may not be able to further develop our product candidates or bring them to market and generate product revenue.

In the future we may enter into collaborations with third parties for the development and commercialization of product candidates. If those collaborations are not successful, we may not be able to capitalize on the market potential of these product candidates.

We may in the future seek third-party collaborators for the development and commercialization of one or more of our product candidates. Our likely collaborators for any future collaboration arrangements include large and mid-size biopharmaceutical companies, regional and national biopharmaceutical companies and biotechnology companies. We have and will likely have limited control over the amount and timing of resources that our collaborators dedicate to the development or commercialization of our product candidates. Our ability to generate revenues from these arrangements will depend on our collaborators' abilities and efforts to successfully perform the functions assigned to them in these arrangements. Collaborations involving our product candidates could pose numerous risks to us, including the following:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations and may not perform their obligations as expected;

- collaborators may deemphasize or not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs based on clinical trial results, changes in the collaborators' strategic focus, including as a result of a sale or disposition of a business unit or development function, or available funding or external factors such as an acquisition that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our product candidates if the collaborators believe that competitive products are more likely to be successfully developed or can be commercialized under terms that are more economically attractive than ours;
- a collaborator with marketing and distribution rights to multiple products may not commit sufficient resources to the marketing and distribution of our product candidates relative to other products;
- collaborators may not properly obtain, maintain, defend or enforce our intellectual property rights or may use our proprietary information and intellectual property in such a way as to invite litigation or other intellectual property-related proceedings that could jeopardize or invalidate our proprietary information and intellectual property or expose us to potential litigation or other intellectual property-related proceedings;
- disputes may arise between the collaborators and us that result in the delay or termination of the research, development or commercialization of our product candidates or that result in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates;
- collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all; and
- if a collaborator of ours were to be involved in a business combination, the continued pursuit and emphasis on our product candidate development or commercialization program could be delayed, diminished or terminated.

Our employees, independent contractors, consultants, commercial collaborators, principal investigators, CROs, suppliers and vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have an adverse effect on our results of operations.

We are exposed to the risk that our employees, independent contractors, consultants, commercial collaborators, principal investigators, CROs, suppliers and vendors may engage in misconduct or other improper activities. Misconduct by these parties could include failures to comply with FDA regulations, provide accurate information to the FDA, comply with federal and state health care fraud and abuse laws and regulations, accurately report financial information or data or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the health care industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Misconduct by these parties could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter misconduct by these parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant penalties, including civil, criminal and administrative penalties, damages, fines, disgorgement, individual imprisonment, exclusion from participation in government funded healthcare programs, such as Medicare and Medicaid, integrity oversight and reporting obligations, contractual damages, reputational harm, diminished profits and future earnings and the curtailment or restructuring of our operations.

Risks Related to Manufacturing

Manufacturing cell therapy products is complex and subject to both human and systemic risks. Our third-party manufacturers or we may encounter difficulties in production and sourcing and may be subject to variations and supply constraints of critical components. If we or any of our third-party manufacturers encounter such difficulties, our ability to supply our product candidates for clinical trials or our products for patients, if approved, could be delayed or prevented.

The manufacture of biologic cell therapy product candidates, and products, if approved, is complex and requires significant expertise and capital investment, including developing advanced manufacturing techniques and process controls. Manufacturers of biologic products often encounter difficulties in production and sourcing, particularly in scaling up or out, validating the production process, and assuring high reliability of the manufacturing processes (including the absence of contamination), in light of variations and supply constraints of critical components. These problems include logistics and shipping, difficulties with production costs and yields, quality control, including consistency, stability, purity, and efficacy of the product, product testing, operator error, and availability of qualified personnel, as well as compliance with strictly enforced federal, state and foreign regulations. Furthermore, if contaminants are discovered in our supply of our product candidates or in the manufacturing facilities, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We cannot assure you that any stability, purity, and efficacy failures, deficiencies, or other issues relating to manufacturing our product candidates will not occur in the future.

Additionally, our product candidates are derived from cells collected from humans. Such cells may vary in type and quality as the donors may vary in age, medical history and many other factors. We have strict specifications for donor cell material and our product candidates. The donor cell material variability may exceed our manufacturing process capability or deviate from the specified ranges and result in failure in the production of the cell therapy product, lower quality batches, or even require adjustments to the specifications approved by authorities. The donor cell material may also be variable in factors that we currently may not be able to detect with the analytical methods used or may not know how to measure. We may also discover failures with the material after production. As a result, we may not be able to deliver the quality and consistency of our cell therapy products that we need or may need to re-collect cell material which can increase costs and/or cause delay, adversely impact patient outcomes and otherwise harm our clinical trials, reputation, business and prospects.

We may fail to manage the logistics of collecting and shipping patient material to the manufacturing site, shipping the product candidate back to the relevant parties, and experiencing delays or shortages of certain clinical or commercial-grade supplies and components. Logistical and shipment delays and problems caused by us, our vendors, or other factors not in our control, including business interruptions, global supply chain issues, and weather, could prevent or delay the delivery of product candidates to patients. Additionally, we have to maintain a complex chain of identity and chain of custody with respect to donor material as it moves to the manufacturing facility, through the manufacturing processes, and ultimately to a patient. Failure to maintain a chain of identity and chain of custody could result in patient death, loss of product, or regulatory action.

The transfer or production of our cell banks to a contract development manufacturing organization may fail and result in delays, additional costs, or technical failure.

We currently purchase our cell therapy product candidates from a contract development and manufacturing organization, or CDMO. We are in the process of contracting with a CDMO, for the transfer of our experimental cell bank to produce our master cell bank, working cell bank and our fibroblast cell-based product candidates to enable clinical trials. If the transfer of our experimental cell bank to the CDMO is not successful, we may encounter delays, additional costs, or technical failure of one or more of our product candidates. Similarly, if the CDMO is unable to produce from the experimental cell bank our master cell bank, working cell bank and our fibroblast cell-based product candidates to enable clinical trials, we may encounter delays, additional costs, or technical failure of one or more of our product candidates.

Changes in the methods of product candidate manufacturing or formulation may result in additional costs or delay.

As product candidates proceed through preclinical studies to late-stage clinical trials towards potential marketing approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods, formulation, materials and processes, are altered along the way in an effort to optimize processes and product characteristics. Such alterations can also occur due to changes in manufacturers. Such changes carry the risk that they will not achieve their intended objectives. Any such changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials conducted with product candidates produced using the modified manufacturing methods, materials and processes. Such changes may also require additional testing, FDA notification or FDA approval. This could delay the completion of clinical trials, require the conduct of bridging clinical trials or the repetition of one or more clinical trials beyond those we currently anticipate, increase clinical trial costs, delay approval of our product candidates and jeopardize our ability to commercialize our product candidates if approved. In addition, we may be required to make significant changes to our upstream and downstream processes across our pipeline, which could delay the development of future product candidates.

If we or our third-party manufacturers use hazardous and biological materials in a manner that causes injury or violates applicable law, we may be liable for damages.

Research and development activities involve the controlled use of potentially hazardous substances, including chemical and biological materials, by us and our third-party manufacturers. We currently outsource all manufacturing to third parties. Still, we and our manufacturers are subject to federal, state and local laws and regulations in the United States governing the use, manufacture, storage, handling and disposal of medical and hazardous materials. Although we believe that our manufacturers' procedures for using, handling, storing and disposing of these materials comply with legally prescribed standards, we cannot completely eliminate the risk of contamination or injury resulting from medical or hazardous materials. As a result of any such contamination or injury, we may incur liability, or local, city, state or federal authorities may curtail the use of these materials and interrupt our business operations. In the event of an accident, we could be held liable for damages or penalized with fines, and the liability could exceed our resources. We do not currently have any insurance for liabilities arising from medical or hazardous materials. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development and production efforts, which could harm our business, prospects, financial condition or results of operations.

We rely on third parties for our manufacturing process and may, in the future, depend on third-party manufacturers for our product candidates, and this increases the risk related to the timely and sufficient production of our product candidates.

We do not have complete control over all aspects of the manufacturing process of, and are dependent on, our contract manufacturing partners for compliance with cGMP regulations for manufacturing our cell therapy product candidates. Third-party manufacturers may be unable to comply with cGMP regulations or similar regulatory requirements outside the United States. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA, the EMA or others, they will not be able to secure and/or maintain marketing approval for their manufacturing facilities. In addition, we do not have control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA, the EMA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our 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 marketing approval for or market our product candidates, if approved. Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates and harm our business and results of operations. Furthermore, the raw materials for our product candidates may be sourced, in some cases, from a single-source supplier. If we were to experience an unexpected loss of supply of any of our product candidates or any of our future product candidates for any reason, whether as a result of manufacturing, supply, or storage issues or otherwise, we could experience delays, disruptions, suspensions or terminations of, or be required to restart or repeat, any pending or ongoing clinical trials.

We currently rely on third-party manufacturers to produce our product candidates for use in development and commercialization under the guidance of members of our organization. In the event that we or any of our third-party manufacturers fail to comply with such requirements or to perform with certain requirements in relation to quality, timing, or otherwise, or if our supply of components or other materials becomes limited or interrupted for other reasons, we may be forced to enter into an agreement with another third party, which we may not be able to do on commercially reasonable terms, if at all. In particular, any replacement of our third-party manufacturers could require significant effort and expertise because there may be a limited number of qualified replacements. In some cases, the technical skills or technology required to manufacture our product candidates may be unique or proprietary to us or the third-party manufacturer. We may have difficulty transferring such skills or technology to another third party, and a feasible alternative may not exist. In addition, certain of our product candidates and our own proprietary methods have never been produced or implemented outside of our company. Therefore, we may experience delays in our development programs if we attempt to establish new third-party manufacturing arrangements for these product candidates or methods. These factors would increase our reliance on such manufacturers or require us to obtain a license from such manufacturers in order to have another third party manufacture our product candidates. If we are required to or voluntarily stop manufacturing our product candidates for any reason, we will be required to verify that the new manufacturer maintains facilities and procedures that comply with quality standards and with all applicable regulations and guidelines and that the product produced is equivalent to that produced in our facility. The delays associated with the verification of a new manufacturer and equivalent product could negatively affect our ability to develop product candidates in a timely manner or within budget.

Our or a third party's failure to execute our manufacturing requirements, do so on commercially reasonable terms and timelines, and comply with cGMP requirements could adversely affect our business in a number of ways, including:

- inability to meet our product specifications and quality requirements consistently;
- inability to initiate or continue clinical trials of our product candidates under development;
- delays in submitting regulatory applications or receiving marketing approvals for our product candidates, if at all;
- inability to commercialize any product candidates that receive marketing approval on a timely basis;
- loss of the cooperation of future collaborators;
- subjecting third-party manufacturing facilities or our manufacturing facilities to additional inspections by regulatory authorities;
- requirements to cease development or to recall batches of our product candidates; and
- in the event of approval to market and commercialize our product candidates, an inability to meet commercial demands for our product candidates or any future product candidates.

Any contamination or interruption in our manufacturing processes, shortages of raw materials, or failure of our suppliers to deliver necessary components could result in delays in our clinical development or marketing schedules.

Given the nature of cell therapy manufacturing, there is a risk of contamination. Any contamination could adversely affect our ability to produce product candidates on schedule and could, therefore, harm our results of operations and cause reputational damage. Additionally, although our cell therapies are tested for contamination prior to release, if a contaminated product candidate was administered to a patient, it could result in harm to the patient. Some of the raw materials required in our manufacturing process are derived from biological sources. Such raw materials are difficult to procure and may be subject to contamination or recall. A material shortage, contamination, recall, or restriction on the use of biologically derived substances in the manufacture of our product candidates could adversely impact or disrupt the commercial manufacturing or the production of clinical material, which could adversely affect our development timelines and our business, financial condition, results of operations and prospects.

Risks Related to Legal and Regulatory Compliance Matters

Our relationships with healthcare professionals, clinical investigators, CROs and third-party payors in connection with our current and future business activities may be subject to federal and state healthcare fraud and abuse laws, false claims laws, transparency laws, government price reporting, and health information privacy and security laws, which could expose us to, among other things, criminal sanctions, civil penalties, contractual damages, exclusion from governmental healthcare programs, reputational harm, administrative burdens and diminished profits and future earnings.

Healthcare providers and third-party payors play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our current and future arrangements with healthcare professionals, clinical investigators, CROs, third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our product candidates for which we obtain marketing approval. Restrictions under applicable federal and state healthcare laws and regulations include the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or paying any remuneration (including any kickback, bribe or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for the purchase, lease, order, arrangement, or recommendation of any good, facility, item or service for which payment may be made, in whole or in part, under a federal healthcare program, such as the Medicare and Medicaid programs. A person or entity does not need to have actual knowledge of the federal Anti-Kickback Statute or specific intent to violate it to have committed a violation. Violations are subject to civil fines and criminal penalties for each violation, plus up to three times the remuneration involved, imprisonment, and exclusion from government healthcare programs. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act or federal civil money penalties;

- the federal civil and criminal false claims laws and civil monetary penalty laws, such as the federal False Claims Act, which impose criminal and civil penalties and authorize civil whistleblower or qui tam actions, against individuals or entities for, among other things: knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent; knowingly making, using or causing to be made or used, a false statement of record material to a false or fraudulent claim or obligation to pay or transmit money or property to the federal government or knowingly concealing or knowingly and improperly avoiding or decreasing an obligation to pay money to the federal government. Manufacturers can be held liable under the federal False Claims Act even when they do not submit claims directly to government payors if they are deemed to “cause” the submission of false or fraudulent claims. The federal False Claims Act also permits a private individual acting as a “whistleblower” to bring actions on behalf of the federal government alleging violations of the federal False Claims Act and to share in any monetary recovery;
- the Health Insurance Portability and Accountability Act of 1996, or HIPAA, which prohibits, among other things, a person from knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false, fictitious, or fraudulent statements or representations in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- HIPAA, as further amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their respective implementing regulations, including the Final Omnibus Rule published in January 2013, which impose certain requirements on certain covered healthcare providers, health plans and healthcare clearinghouses, as well as their respective business associates, independent contractors or agents of covered entities, that perform services for them that involve the use, creation, maintenance, receipt or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys’ fees and costs associated with pursuing federal civil actions. In addition, there are additional federal, state and non-U.S. laws which govern the privacy and security of health and other personal information in certain circumstances to which we may be subject and many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts;
- federal government price reporting laws, which require manufacturers to calculate and report complex pricing metrics in an accurate and timely manner to government programs;

- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers;
- The ACA, including the provision commonly referred to as the Physician Payments Sunshine Act and its implementing regulations, which require applicable manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program to report annually to the U.S. Centers for Medicare & Medicaid Services, or CMS, within the U.S. Department of Health and Human Services, information related to payments or other transfers of value made to physicians, nurse practitioners, certified nurse anesthetists, physician assistants, clinical nurse specialists, and certified nurse midwives as well as teaching hospitals and to disclose ownership and investment interests held by physicians and their immediate family members; and
- many state laws that govern the privacy of personal information in specified circumstances. For example, in California, the California Consumer Privacy Act, or the CCPA, which went into effect on January 1, 2020, establishes a new privacy framework for covered businesses by creating an expanded definition of personal information, establishing new data privacy rights for consumers in the State of California, imposing special rules on the sale of personal information, and creating a new and potentially severe statutory damages framework for violations of the CCPA and for businesses that fail to implement reasonable security procedures and practices to prevent data breaches. While clinical trial data and information governed by HIPAA are currently exempt from the CCPA, other personal information collection practices may be subject to the CCPA and possible changes to the CCPA may broaden its scope.

Additionally, we are subject to state and foreign equivalents of each of the healthcare laws and regulations described above, among others, some of which may be broader in scope and may apply regardless of the payor. Many U.S. states have adopted laws similar to the federal Anti-Kickback Statute and False Claims Act, and may apply to our business practices, including, but not limited to, research, distribution, sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental payors, including private insurers. In addition, some states have passed laws that require biopharmaceutical companies to comply with the April 2003 Office of Inspector General Compliance Program Guidance for Pharmaceutical Manufacturers and/or the Pharmaceutical Research and Manufacturers of America’s Code on Interactions with Healthcare Professionals. Several states also impose other marketing restrictions or require biopharmaceutical companies to make marketing or price disclosures to the state and require the registration of biopharmaceutical sales representatives. Privacy and data protection laws from outside of the United States, including, for example, the European Union General Data Protection Regulation and the UK Data Protection Act 2018, or, collectively, the GDPR, also govern the privacy and security of personal information, including health information in some circumstances, and many of these laws differ from each other in significant ways, thus complicating compliance efforts. In addition, in the United States, there are a number of states that have enacted laws that govern the privacy and security of personal information, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts. There are ambiguities as to what is required to comply with these state requirements and if we fail to comply with an applicable state law requirement we could be subject to penalties.

The scope and enforcement of each of these laws is uncertain and subject to rapid change in the current environment of healthcare reform, especially in light of the lack of applicable precedent and regulations. Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry. Ensuring business arrangements comply with applicable healthcare and privacy laws, as well as responding to possible investigations by government authorities, can be time and resource-consuming and can divert a company’s attention from the business.

Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, 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 administrative, civil and criminal penalties, damages, fines, disgorgement, the exclusion from participation in federal and state healthcare programs, individual imprisonment, reputational harm and the curtailment or restructuring of our operations, as well as additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws. Further, defending against any such actions can be costly and 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 physicians or other providers or entities with whom we do, or expect to do, business is found to not be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs and imprisonment. If any of the above occur, our ability to operate our business and our results of operations could be adversely affected.

We may be or become subject to evolving global data protection laws and regulations, which may require us to incur substantial compliance costs, and any failure or perceived failure by us to comply with such laws and regulations may harm our business and operations.

The global data protection landscape is rapidly evolving, and we may be or become subject to or affected by numerous federal, state and foreign laws and regulations, as well as regulatory guidance, governing the collection, use, disclosure, transfer, security and processing of personal data, such as information that we collect about participants and healthcare providers in connection with clinical trials. Implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future, which may create uncertainty in our business, affect our ability to operate in certain jurisdictions or to collect, store, transfer use and share personal data, result in liability or impose additional compliance or other costs on us. Any failure or perceived failure by us to comply with federal, state, or foreign laws or self-regulatory standards could result in negative publicity, diversion of management time and effort and proceedings against us by governmental entities or others. For example, states, such as California, Virginia, Colorado, Utah and Connecticut have recently enacted consumer privacy laws that grant rights to data subjects and places privacy and security obligations on entities handling personal data of consumers or households. Some observers note that the CCPA and similar legislation could mark the beginning of a trend toward more stringent privacy legislation in the United States, which could increase our potential liability and adversely affect our business.

In addition to our operations in the United States, which may be subject to healthcare and other laws relating to the privacy and security of health information and other personal information, we may seek to conduct clinical trials in the United Kingdom or the European Economic Area, or the EEA, and may become subject to additional European data privacy laws, regulations and guidelines. We will be subject to the data protection laws of the European Union and United Kingdom in relation to personal data we collect from these territories. These laws impose additional obligations and risk upon our business, including substantial expenses and changes to business operations that are required to comply with these laws. The withdrawal of the United Kingdom from the European Union, or Brexit, and the subsequent separation of the data protection regimes of these territories mean we are required to comply with separate data protection laws in the European Union and United Kingdom, which may lead to additional compliance costs and could increase our overall risk.

The GDPR, which deals with the processing of personal data and on the free movement of such data, imposes a broad range of strict requirements, including requirements relating to having lawful bases for processing personal data and transferring such information outside the EEA/UK, including to the United States, providing details to those individuals regarding the processing of their personal data, keeping personal data secure, having data processing agreements with third parties who process personal data, responding to individuals' requests to exercise their rights in respect of their personal data, reporting security breaches involving personal data to the competent national data protection authority and affected individuals, appointing data protection officers, conducting data protection impact assessments and record-keeping.

The GDPR imposes strict rules on the transfer of personal data out of the EEA/UK to countries not regarded by European Commission and the United Kingdom government as providing adequate protection, or the third countries, including the United States. These transfers are prohibited unless an appropriate safeguard specified by data protection laws is implemented, such as the Standard Contractual Clauses, or the SCCs, approved by the European Commission, or a derogation applies. The UK has published its own transfer mechanism, the International Data Transfer Agreement and International Data Transfer Addendum, which enables transfers from the UK and has implemented a similar Transfer Equivalence Test. The international transfer obligations under the EU and UK data protection regimes require effort and cost and may result in us needing to make strategic considerations around where EEA/UK personal data is located and which service providers we utilize for the processing of EEA/UK personal data, particularly as the enforcement around GDPR international transfer compliance obligations is currently unclear. The UK Government has also now introduced a Data Protection and Digital Information Bill, or the UK Bill, into the UK legislative process with the intention for this bill to reform the UK's data protection regime. If passed, the final version of the UK Bill may have the effect of further altering the similarities between the UK and EU data protection regime. This may lead to additional compliance costs and could increase our overall risk.

We cannot assure you that any efforts to comply with any obligations under European privacy laws will be sufficient. If we are investigated by a European data protection authority, we may face fines and other penalties. Any such investigation or charges by European data protection authorities could have a negative effect on our reputation and materially harm our business.

Our business entails a significant risk of product liability and if we are unable to obtain sufficient insurance coverage such inability could have an adverse effect on our business and financial condition.

Our business exposes us to significant product liability risks inherent in the development, testing, manufacturing and marketing of therapeutic treatments. Product liability claims could delay or prevent completion of our development programs. If we succeed in marketing product candidates, such claims could result in an FDA, EMA or other regulatory authority investigation of the safety and effectiveness of our product candidates, our manufacturing processes and facilities or our marketing programs. FDA, EMA or other regulatory authority investigations could potentially lead to a recall of our product candidates or more serious enforcement action, limitations on the approved indications for which they may be used or suspension or withdrawal of approvals. Regardless of the merits or eventual outcome, liability claims may also result in decreased demand for our product candidates, if approved, injury to our reputation, costs to defend the related litigation, a diversion of management's time and our resources and substantial monetary awards to trial participants or patients. We currently have product liability insurance that we believe is appropriate for our stage of development and may need to obtain higher levels prior to marketing any of our product candidates, if approved. Any insurance we have or may obtain may not provide sufficient coverage against potential liabilities. Furthermore, clinical trial and product liability insurance is becoming increasingly expensive. As a result, we may be unable to obtain sufficient insurance at a reasonable cost to protect us against losses caused by product liability claims that could have an adverse effect on our business and financial condition.

Any product candidates we develop may become subject to unfavorable third-party coverage and reimbursement practices, as well as pricing regulations.

The availability and extent of coverage and adequate reimbursement by third-party payors, including government health administration authorities, private health coverage insurers, managed care organizations and other third-party payors is essential for most patients to be able to afford expensive treatments. Sales of any of our product candidates that receive marketing approval will depend substantially, both in the United States and internationally, on the extent to which the costs of our product candidates will be covered and reimbursed by third-party payors. If reimbursement is not available, or is available only to limited levels, we may not be able to successfully commercialize our product candidates. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us to establish or maintain pricing sufficient to realize an adequate return on our investment. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If coverage and reimbursement are not available or reimbursement is available only to limited levels, we may not successfully commercialize any product candidate for which we obtain marketing approval. 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.

There is significant uncertainty related to third-party payor coverage and reimbursement of newly approved products. In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors and coverage and reimbursement levels for products can differ significantly from payor to payor. The Medicare and Medicaid programs increasingly are used as models for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs and biologics. However, one third-party payor's determination to provide coverage for a product candidate does not assure that other payors will also provide coverage for the product candidate. As a result, the coverage determination process is often time-consuming and costly. This process will require us to provide scientific and clinical support for the use of our product candidates to each third-party payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Factors payors consider in determining reimbursement are based on whether the product is: (i) a covered benefit under its health plan; (ii) safe, effective and medically necessary; (iii) appropriate for the specific patient; (iv) cost-effective; and (v) neither experimental nor investigational.

Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. Further, such payors are increasingly challenging the price, examining the medical necessity and reviewing the cost effectiveness of medical product candidates. There may be especially significant delays in obtaining coverage and reimbursement for newly approved drugs. Third-party payors may limit coverage to specific product candidates on an approved list, known as a formulary, which might not include all FDA-approved drugs for a particular indication. We may need to conduct expensive pharmacoeconomic studies to demonstrate the medical necessity and cost effectiveness of our product candidates. Nonetheless, our product candidates may not be considered medically necessary or cost effective. We cannot be sure that coverage and reimbursement will be available for any product candidate that we commercialize and, if reimbursement is available, what the level of reimbursement will be.

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, Canada and other countries has and will continue to put pressure on the pricing and usage of therapeutics such as our product candidates. In many countries, particularly the countries of the European Union, medical product prices are subject to varying price control mechanisms as part of national health systems. In these countries, pricing negotiations with governmental authorities can take considerable time after a product receives marketing approval. To obtain reimbursement or pricing approval in some countries, we may be required to conduct a clinical trial that compares the cost-effectiveness of our product candidate to other available therapies. In general, product prices under such systems are substantially lower than in the United States. Other countries allow companies to fix their own prices for products, but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our product candidates. Accordingly, in markets outside the United States, the reimbursement for our product candidates may be reduced compared with the United States and may be insufficient to generate commercially reasonable revenue and profits.

If we are unable to establish or sustain coverage and adequate reimbursement for any future product candidates from third-party payors, the adoption of those product candidates and sales revenue will be adversely affected, which, in turn, could adversely affect the ability to market or sell those product candidates, if approved. 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 product candidates for which we receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

We face potential liability related to the privacy of health information we obtain from clinical trials sponsored by us.

Most healthcare providers, including research institutions from which we obtain patient health information, are subject to privacy and security regulations promulgated under HIPAA, as amended by the HITECH. We are not currently classified as a covered entity or business associate under HIPAA and thus are not directly subject to its requirements or penalties. However, 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. In addition, we may maintain sensitive personally identifiable information, including health information, that we receive throughout the clinical trial process, in the course of our research collaborations, and directly from individuals (or their healthcare providers) who enroll in our patient assistance programs. As such, we may be subject to state laws requiring notification of affected individuals and state regulators in the event of a breach of personal information, which is a broader class of information than the health information protected by HIPAA.

Furthermore, certain health privacy laws, data breach notification laws, consumer protection laws and genetic testing laws may apply directly to our operations and/or those of our collaborators and may impose restrictions on our collection, use and dissemination of individuals' health information. Patients about whom we or our collaborators obtain health information, as well as the providers who share this information with us, may have statutory or contractual rights that limit our ability to use and disclose the information. We may be required to expend significant capital and other resources to ensure ongoing compliance with applicable privacy and data security laws. Claims that we have violated individuals' privacy rights or breached our contractual obligations, even if we are not found liable, could be expensive and time consuming to defend and could result in adverse publicity that could harm our business.

If we or third-party contract manufacturing organizations, CROs or other contractors or consultants fail to comply with applicable federal, state or local regulatory requirements, we could be subject to a range of regulatory actions that could affect our or our contractors' ability to develop and commercialize our product candidates and could harm or prevent sales of any affected product candidates that we are able to commercialize, or could substantially increase the costs and expenses of developing, commercializing and marketing our product candidates. Any threatened or actual government enforcement action could also generate adverse publicity and require that we devote substantial resources that could otherwise be used in other aspects of our business. Increasing use of social media could give rise to liability, breaches of data security or reputational damage.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties.

Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of hazardous and flammable materials, including chemicals and biological materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or commercialization efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

The FDA, the EMA and other comparable foreign regulatory authorities may not accept data from trials conducted in locations outside of their jurisdiction.

We may choose to conduct international clinical trials in the future. The acceptance of study data by the FDA, the EMA or other comparable foreign regulatory authority from clinical trials conducted outside of their respective jurisdictions may be subject to certain conditions. In cases where data from foreign clinical trials are intended to serve as the basis for marketing approval in the United States, the FDA will generally not approve the application on the basis of foreign data alone unless (i) the data are applicable to the United States population and United States medical practice; (ii) the trials are performed by clinical investigators of recognized competence and pursuant to current GCP requirements; and (iii) the FDA is able to validate the data through an on-site inspection or other appropriate mean. Additionally, the FDA's clinical trial requirements, including the adequacy of the patient population studied and statistical powering, must be met. In addition, such foreign trials would be subject to the applicable local laws of the foreign jurisdictions where the trials are conducted. There can be no assurance that the FDA, the EMA or any applicable foreign regulatory authority will accept data from trials conducted outside of its applicable jurisdiction. If the FDA, the EMA or any applicable foreign regulatory authority does not accept such data, it would result in the need for additional trials, which would be costly and time-consuming and delay aspects of our business plan, and which may result in our product candidates not receiving approval for commercialization in the applicable jurisdiction.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our product candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction. For example, even if the FDA or the EMA grants marketing approval of a product candidate, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion and reimbursement of the product candidate in those countries. However, a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from those in the United States, including additional preclinical studies or clinical trials as clinical trials conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a product candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our product candidates is also subject to approval.

Obtaining foreign regulatory approvals and establishing and maintaining compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our product candidates in certain countries. If we or any future collaborator fail to comply with the regulatory requirements in international markets or fail to receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed.

Even if our product candidates receive regulatory approval and become products, they will be subject to significant post-marketing regulatory requirements and oversight.

Any regulatory approvals that we may receive for our product candidates will require the submission of reports to regulatory authorities and surveillance to monitor the safety and efficacy of the products, may contain significant limitations related to use restrictions for specified age groups, warnings, precautions or contraindications, and may include burdensome post-approval study or risk management requirements. For example, the FDA may require a REMS in order to approve our product candidates, which could entail requirements for a medication guide, physician training and communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA, the EMA or foreign regulatory authorities approve our product candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our product candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as ongoing compliance with cGMPs and GCP for any clinical trials that we conduct post-approval. In addition, manufacturers of drug products and their facilities are subject to continual review and periodic, unannounced inspections by the FDA and other regulatory authorities for compliance with cGMP regulations and standards. If we or a regulatory agency discover previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facilities where the product is manufactured, a regulatory agency may impose restrictions on that product, the manufacturing facility or us, including requiring recall or withdrawal of the product from the market or suspension of manufacturing. In addition, failure to comply with FDA, the EMA or other comparable foreign regulatory requirements may subject our company to administrative or judicially imposed sanctions, including:

- delays in or the rejection of product approvals;
- restrictions on our ability to conduct clinical trials, including full or partial clinical holds on ongoing or planned trials;

- restrictions on the products, manufacturers or manufacturing process;
- warning or untitled letters;
- civil and criminal penalties;
- injunctions;
- suspension or withdrawal of regulatory approvals;
- product seizures, detentions or import bans;
- voluntary or mandatory product recalls and publicity requirements;
- total or partial suspension of production; and
- imposition of restrictions on operations, including costly new manufacturing requirements.

The occurrence of any event or penalty described above may inhibit our ability to commercialize our product candidates and generate revenue and could require us to expend significant time and resources in response and could generate negative publicity.

The FDA's and other regulatory authorities' policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval 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, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, and we may not achieve or sustain profitability.

We also 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. For example, certain policies of the current U.S. administration may impact our business and industry. Namely, the previous U.S. administration took several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine regulatory and oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict whether or how these executive actions, including the Executive Orders, will be implemented, or whether they will be rescinded or replaced under the new U.S. administration. If these executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

The FDA and other regulatory agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses.

If any of our product candidates are approved and we are found to have improperly promoted off-label uses of those products, 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. In particular, a product may not be promoted for uses that are not approved by the FDA, the EMA or such other regulatory agencies as reflected in the product's approved labeling. If we receive marketing approval for a product candidate, physicians may nevertheless prescribe it to their patients in a manner that is inconsistent with the approved label. If we are found to have promoted such off-label uses, we may become subject to significant liability. The U.S. federal government has levied large civil and criminal fines against companies for alleged improper promotion of off-label use and has enjoined several companies from engaging in off-label promotion. The government has also required companies to enter into consent decrees or imposed permanent injunctions under which specified promotional conduct is changed or curtailed. If we cannot successfully manage the promotion of our product candidates, if approved, we could become subject to significant liability, which would materially adversely affect our business and financial condition.

We may face difficulties from changes to current regulations and future legislation.

Existing regulatory policies may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. 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 are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

For example, the ACA substantially changed the way healthcare is financed by both the government and private insurers, and significantly impacts the U.S. biopharmaceutical industry. Other legislative changes have been proposed and adopted in the United States since the ACA was enacted. These changes include aggregate reductions to Medicare payments and may result in additional reductions in Medicare and other healthcare funding, all of which could have a material adverse effect on customers for our product candidates, if approved, and accordingly, our financial operations.

There have also been several changes and challenges to the 340B drug pricing program, which imposes ceilings on prices that drug manufacturers can charge for medications sold to certain health care facilities. It is unclear how these developments could affect covered hospitals who might purchase our future product candidate and affect the rates we may charge such facilities for our approved product candidates in the future, if any.

Moreover, there has been heightened governmental scrutiny in recent years over the manner in which drug manufacturers set prices for their marketed products, which has resulted in several U.S. Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for pharmaceutical products. The U.S. Congress has indicated that it will continue to seek new legislative measures to control drug costs.

Further, on May 30, 2018, the Right to Try Act was signed into law. The law, among other things, provides a federal framework for certain patients to access certain investigational new product candidates that have completed a Phase I clinical trial and that are undergoing investigation for FDA approval. Under certain circumstances, eligible patients can seek treatment without enrolling in clinical trials and without obtaining FDA permission under the FDA expanded access program. There is no obligation for a drug manufacturer to make its products available to eligible patients as a result of the Right to Try Act.

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

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for biotechnology products. We cannot be sure whether additional legislative changes will be enacted, or whether FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In addition, increased scrutiny by Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-marketing testing and other requirements.

Risks Related to Our Intellectual Property

Our success depends on our ability to protect our intellectual property and our proprietary technologies.

Our commercial success depends in part on our ability to obtain and maintain patent protection and trade secret protection for our product candidates, proprietary technologies and their uses to operate without infringing the proprietary rights of others. If we or our licensors are unable to protect our intellectual property rights or if our intellectual property rights are inadequate for our technology or our product candidates, our competitive position could be harmed. We and our licensors generally seek to protect our proprietary position by filing patent applications in the United States and abroad related to our product candidates, proprietary technologies and their uses that are important to our business. Our in-licensed patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless, and until, patents issue from such applications, and then only to the extent the issued claims cover the technology. There can be no assurance that our in-licensed patent applications will result in patents being issued or that issued patents will afford sufficient protection against competitors with similar technology, nor can there be any assurance that the patents if issued will not be infringed, designed around, invalidated or rendered unenforceable by third parties. Even issued patents may later be found invalid or unenforceable or may be modified or revoked in proceedings instituted by third parties before various patent offices or in courts. The degree of future protection for our and our licensors' proprietary rights is uncertain. Only limited protection may be available and may not adequately protect our or our licensors' rights or permit us or our licensors to gain or keep any competitive advantage. These uncertainties and/or limitations in our and our licensors' ability to properly protect the intellectual property rights relating to our product candidates could have a material adverse effect on our financial condition and results of operations.

Although we may in-license issued patents in the United States and foreign countries, we cannot be certain that the claims in our other in-licensed U.S. pending patent applications, corresponding international patent applications and patent applications in certain foreign countries will be considered patentable by the United States Patent and Trademark Office, or USPTO, courts in the United States or by the patent offices and courts in foreign countries, nor can we be certain that the claims in our in-licensed issued patents will not be found invalid or unenforceable if challenged.

The patent application process is subject to numerous risks and uncertainties, and there can be no assurance that we or our licensors or any of our potential future collaborators will be successful in protecting our product candidates by obtaining and defending patents. These risks and uncertainties include the following:

- the USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent process, the noncompliance with which can result in abandonment or lapse of a patent or patent application, and partial or complete loss of patent rights in the relevant jurisdiction;
- patent applications may not result in any patents being issued;
- patents may be challenged, invalidated, modified, revoked, circumvented, found to be unenforceable or otherwise may not provide any competitive advantage;
- the degree and range of protection any issued patents will afford us against competitors, including whether third parties will find ways to invalidate or otherwise circumvent our patents;
- whether others will apply for or obtain patents claiming aspects similar to those covered by our patents and patent applications;
- whether the patent applications that we own or in-license will result in issued patents with claims that cover our product candidates or uses thereof in the United States or in other foreign countries;
- our competitors, many of whom have substantially greater resources than we or our licensors do and many of whom have made significant investments in competing technologies, may seek or may have already obtained patents that will limit, interfere with or block our ability to make, use and sell our product candidates;
- there may be significant pressure on the U.S. government and international governmental bodies to limit the scope of patent protection both inside and outside the United States for disease treatments that prove successful, as a matter of public policy regarding worldwide health concerns; and
- countries other than the United States may have patent laws less favorable to patentees than those upheld by U.S. courts, allowing foreign competitors a better opportunity to create, develop and market competing products.

The patent prosecution process is also expensive and time-consuming, and we or our licensors may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner or in all jurisdictions where protection may be commercially advantageous. It is also possible that we or our licensors may not identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, in some circumstances, we do not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the patents, directed to technology that we license, including those from our licensors and from third parties. We also may require the cooperation of our licensors in order to enforce the licensed patent rights, and such cooperation may not be provided. Therefore, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. We cannot be certain that patent prosecution and maintenance activities by our licensors have been or will be conducted in compliance with applicable laws and regulations, which may affect the validity and enforceability of such patents or any patents that may issue from such applications. If they fail to do so, this could cause us to lose rights in any applicable intellectual property that we in-license, and as a result our ability to develop and commercialize products or product candidates may be adversely affected and we may be unable to prevent competitors from making, using and selling competing products.

Composition of matter patents for biological and pharmaceutical products such as cell therapy product candidates often provide a strong form of intellectual property protection for those types of products, as such patents provide protection without regard to any method of use. We cannot be certain, however, that the claims in our pending patent applications covering the composition of matter of our product candidates will be considered patentable by the USPTO, or by patent offices in foreign countries, or that the claims in any of our issued patents will be considered valid and enforceable by courts in the United States or foreign countries. Method of use patents protect the use of a product for the specified method. This type of patent does not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. Moreover, even if competitors do not actively promote their product for our targeted indications, physicians may prescribe these products “off-label” for those uses that are covered by our method of use patents. Although off-label prescriptions may infringe or contribute to the infringement of method of use patents, the practice is common and such infringement is difficult to prevent or prosecute.

In addition, although we enter into non-disclosure and confidentiality agreements with parties who have access to patentable aspects of our research and development output, such as our employees, outside scientific collaborators, CROs, third-party manufacturers, consultants, advisors, licensors and other third parties, any of these parties may breach such agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection.

If the scope of any patent protection our licensors obtain is not sufficiently broad, or if our licensors lose any of the patent protection we license, our ability to prevent our competitors from commercializing similar or identical product candidates would be adversely affected.

The patent position of biopharmaceutical companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. As a result, the existence, issuance, scope, validity, enforceability and commercial value of our in-licensed patent rights are highly uncertain. Our pending and future in-licensed patent applications may not result in patents being issued that protect our product candidates or that effectively prevent others from commercializing competitive product candidates.

Moreover, the scope of claims in a patent application can be significantly reduced before any claims in a patent is issued, and claim scope can be reinterpreted after issuance. Even if patent applications we license currently or in the future issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors or other third parties from competing with us, or otherwise provide us with any competitive advantage. Any patents that we license may be challenged or circumvented by third parties or may be narrowed or invalidated as a result of challenges by third parties. Consequently, we do not know whether our product candidates will be protectable or remain protected by valid and enforceable patents. Our competitors or other third parties may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner, which could materially adversely affect our business, financial condition, results of operations and prospects.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our licensed-in patents may not cover our product candidates or may be challenged in the courts or patent offices in the United States and abroad. We may be subject to a third party pre-issuance submission of prior art to the USPTO, or become involved in opposition, derivation, revocation, reexamination, post-grant review, or PGR, and *inter partes* review, or IPR, or other similar proceedings in the USPTO or foreign patent offices challenging our patent rights. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to validity of our in-licensed patents, for example, we cannot be certain that there is no invalidating prior art, of which we or our licensors and the patent examiner were unaware during prosecution. There is no assurance that all potentially relevant prior art relating to our in-licensed patents and patent applications or those of our licensors has been found. There is also no assurance that there is not prior art of which we or licensors are aware, but which we do not believe affects the validity or enforceability of a claim in our patents and patent applications or those of our licensors, which may, nonetheless, ultimately be found to affect the validity or enforceability of a claim. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate or render unenforceable, our in-licensed patent rights, allow third parties to commercialize our product candidates and compete directly with us, without payment to us. Such loss of licensed patent rights, loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable 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 product candidates. Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates.

We may not identify relevant third-party patents or may incorrectly interpret the relevance, scope or expiration of a third-party patent, which might adversely affect our ability to develop and market our product candidates.

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

One aspect of the determination of patentability of our inventions depends on the scope and content of the "prior art," information that was or is deemed available to a person of skill in the relevant art prior to the priority date of the claimed invention. There may be prior art of which we are not aware that may affect the patentability of our patent claims or, if issued, affect the validity or enforceability of a patent claim. Further, we may not be aware of all third-party intellectual property rights potentially relating to our product candidates or their intended uses, and as a result the impact of such third-party intellectual property rights upon the patentability of our own patents and patent applications, as well as the impact of such third-party intellectual property upon our freedom to operate, is highly uncertain. Because patent applications in the United States and most other countries are confidential for typically a period of 18 months after filing, or may not be published at all, we cannot be certain that we were the first to file any patent application related to our product candidates. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Furthermore, for U.S. applications in which all claims are entitled to a priority date before March 16, 2013, an interference proceeding can be provoked by a third party or instituted by the USPTO to determine who was the first to invent any of the subject matter covered by the patent claims of our applications. For U.S. applications containing a claim not entitled to priority before March 16, 2013, there is a greater level of uncertainty in the patent law in view of the passage of the America Invents Act, which brought into effect significant changes to the U.S. patent laws, including new procedures for challenging pending patent applications and issued patents.

Our patents or pending patent applications may be challenged in the courts or patent offices in the United States and abroad. For example, we may be subject to a third-party pre-issuance submission of prior art to the USPTO or become involved in PGR procedures, oppositions, derivations, reexaminations or IPR proceedings, in the United States or elsewhere, challenging our patent rights or the patent rights of others. An adverse determination in any such challenges may result in loss of exclusivity 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. In addition, 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. Any failure to obtain or maintain patent protection with respect to our product candidates could have a material adverse effect on our business, financial condition, results of operations and prospects.

In the future, some of our intellectual property may be discovered through government-funded programs and thus may be subject to federal regulations such as “march-in” rights, certain reporting requirements and a preference for U.S.-based companies. Compliance with such regulations may limit our exclusive rights and limit our ability to contract with non-U.S. manufacturers.

Some of the intellectual property rights we may acquire or license in the future may be generated through the use of U.S. government funding and may therefore be subject to certain federal regulations. These U.S. government rights may include retained rights in the intellectual property, including a non-exclusive, non-transferable, irrevocable worldwide license to use inventions for any governmental purpose. In addition, the U.S. government may have the right, under certain limited circumstances, to require us to grant exclusive, partially exclusive, or non-exclusive licenses to any of these inventions to a third party if it determines that: (i) adequate steps have not been taken to commercialize the invention; (ii) government action is necessary to meet public health or safety needs; or (iii) government action is necessary to meet requirements for public use under federal regulations (also referred to as “march-in rights”). The U.S. government may also have the right to take title to these inventions if the grant recipient 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. 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 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 non-U.S. product manufacturers for products covered by such intellectual property. To the extent any of our future intellectual property is also generated through the use of U.S. government funding, the provisions of the Bayh-Dole Act may similarly apply.

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

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

- others may be able to develop products that are similar to our product candidates but that are not covered by the claims of the patents that we own or license;
- we or our licensors or future collaborators might not have been the first to make the inventions covered by the issued patents or pending patent applications that we own or license;
- we or our licensors or future collaborators might not have been the first to file patent applications covering certain of our inventions;

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

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

Our commercial success depends significantly on our ability to operate without infringing the patents and other proprietary rights of third parties. Claims by third parties that we infringe their proprietary rights may result in liability for damages or prevent or delay our developmental and commercialization efforts.

Our commercial success depends in part on avoiding infringement of the patents and proprietary rights of third parties. However, our research, development and commercialization activities may be subject to claims that we infringe or otherwise violate patents or other intellectual property rights owned or controlled by third parties. Other entities may have or obtain patents or proprietary rights that could limit our ability to make, use, sell, offer for sale or import our product candidates and products that may be approved in the future, or impair our competitive position. There is a substantial amount of litigation, both within and outside the United States, involving patent and other intellectual property rights in the biopharmaceutical industry, including patent infringement lawsuits, oppositions, reexaminations, IPR proceedings and PGR proceedings before the USPTO and/or foreign patent offices. Numerous third-party U.S. and foreign issued patents and pending patent applications exist in the fields in which we are developing product candidates. There may be third-party patents or patent applications with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates.

As the biopharmaceutical industry expands and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties. We cannot provide any assurances that third-party patents do not exist which might be enforced against our current product candidates or future products, resulting in either an injunction prohibiting our sales, or, with respect to our sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties. Because patent applications are maintained as confidential for a certain period of time, until the relevant application is published, we may be unaware of third-party patents that may be infringed by commercialization of any of our product candidates, and we cannot be certain that we were the first to file a patent application related to a product candidate or technology. Moreover, because patent applications can take many years to issue, there may be currently pending patent applications that may later result in issued patents that our product candidates may infringe. In addition, identification of third-party patent rights that may be relevant to our technology is difficult because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. It is also possible that patents owned by third parties of which we are aware, but which we do not believe are relevant to our product candidates and other proprietary technologies we may develop, could be found to be infringed by our product candidate. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. Any claims of patent infringement asserted by third parties would be time consuming and could:

- result in costly litigation that may cause negative publicity;
- divert the time and attention of our technical personnel and management;
- cause development delays;
- prevent us from commercializing any of our product candidates until the asserted patent expires or is held finally invalid or unenforceable or not infringed in a court of law;
- require us to develop non-infringing technology, which may not be possible on a cost-effective basis;
- subject us to significant liability to third parties; or
- require us to enter into royalty or licensing agreements, which may not be available on commercially reasonable terms, or at all, or which might be non-exclusive, which could result in our competitors gaining access to the same technology.

Although, to our knowledge, no third party has asserted a claim of patent infringement against us as of the date of this prospectus, others may hold proprietary rights that could prevent our product candidates from being marketed. Any patent-related legal action against us claiming damages and seeking to enjoin activities relating to our product candidates or processes could subject us to potential liability for damages, including treble damages if we were determined to willfully infringe, and require us to obtain a license to manufacture or develop our product candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of management and employee resources from our business. We cannot predict whether we would prevail in any such actions or that any license required under any of these patents would be made available on commercially acceptable terms, if at all. Moreover, even if we or our future strategic partners were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property. In addition, we cannot be certain that we could redesign our product candidates or processes to avoid infringement, if necessary. Accordingly, an adverse determination in a judicial or administrative proceeding, or the failure to obtain necessary licenses, could prevent us from developing and commercializing our product candidates, which could harm our business, financial condition and operating results.

Parties making claims against us may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources or more mature and developed intellectual property portfolios, or both. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or administrative proceedings, there is a risk that some of our confidential information could be compromised by disclosure. In addition, 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, our ability to compete in the marketplace, results of operations, financial condition and prospects.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time-consuming and unsuccessful. Further, our in-licensed issued patents could be found invalid or unenforceable if challenged in court.

Competitors may infringe our patents or other intellectual property rights or the intellectual property rights of our licensors. To cease such infringement or unauthorized use, we and/or our licensors may be required to file infringement claims, which can be expensive and time-consuming. Further, our licensors may need to file infringement claims, and our licensors may elect not to file such claims. Our pending patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless and until a patent issues from such applications. In addition, in a patent infringement proceeding, a court may decide that a patent we own or license is not valid, is unenforceable and/or is not infringed. If we or any of our licensors or potential future collaborators were to initiate legal proceedings against a third party to enforce a patent directed at one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable in whole or in part. In patent litigation, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge include an alleged failure to meet any of several statutory requirements, including lack of novelty or written description, obviousness, written description, or non-enablement. Grounds for an unenforceability assertion could include an allegation that someone connected with prosecution of the patent intentionally withheld material information from the USPTO or made a misleading statement during prosecution.

If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on such product candidate. There is also a risk that, even if the validity of such patents is upheld, the court will construe the patent's claims narrowly or decide that we do not have the right to stop the other party from using the invention at issue on the grounds that our patent claims do not cover the invention, or decide that the other party's use of our patented technology falls under the safe harbor to patent infringement under 35 U.S.C. §271(e)(1). In addition, if the breadth or strength of protection provided by our patents and patent applications or those of our licensors is threatened, it could dissuade companies from collaborating with us to license, develop or commercialize current or future product candidates. Such a loss of patent protection would have a material adverse impact on our business. Similarly, if we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks.

Even if resolved in our favor, litigation or other legal proceedings relating to our intellectual property rights may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could compromise our ability to compete in the marketplace.

Even if we establish infringement, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation or other legal proceedings relating to our intellectual property rights, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation or other proceedings.

Intellectual property litigation may lead to unfavorable publicity that harms our reputation and causes the market price of our common shares to decline.

During the course of any intellectual property litigation, there could be public announcements of the initiation of the litigation as well as results of hearings, rulings on motions, and other interim proceedings in the litigation. If securities analysts or investors regard these announcements as negative, the perceived value of our existing product candidates, programs or intellectual property could be diminished. Such announcements could also harm our reputation or the market for our future product candidates, which could have a material adverse effect on our business.

Derivation or interference proceedings may be necessary to determine priority of inventions, and an unfavorable outcome may require us to cease using the related technology or to attempt to license rights from the prevailing party.

Derivation or interference proceedings provoked by third parties or brought by us or our licensors, or declared by the USPTO or similar proceedings in foreign patent offices may be necessary to determine the priority of inventions with respect to, or correct the inventorship of, our or our licensors' patents or patent applications. An unfavorable outcome could result in a loss of our current patent rights and require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms. Our or our licensors' defense of such proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. In addition, the uncertainties associated with such proceedings could have a material adverse effect on our ability to raise the funds necessary to continue our clinical trials, continue our research programs, license necessary technology from third parties or enter into development or manufacturing partnerships that would help us bring our product candidates to market.

Patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

In September 2011, the Leahy-Smith America Invents Act, or Leahy-Smith Act, was signed into law. The Leahy-Smith Act could increase uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted, redefine prior art, and provide more efficient and cost-effective avenues for competitors to challenge the validity of patents. In particular, under the Leahy-Smith Act, the United States transitioned in March 2013 to a "first inventor to file" system in which, assuming that other requirements of patentability are met, the first inventor to file a patent application will be entitled to the patent regardless of whether a third party was first to invent the claimed invention. A third party that files a patent application in the USPTO after March 2013 but before we file an application covering the same invention, could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by such third party. This will require us to be cognizant going forward of the time from invention to filing of a patent application. Furthermore, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our technology and the prior art allow our technology to be patentable over the prior art. Since patent applications in the United States and most other countries are confidential for a period of time after filing or until issuance, we cannot be certain that we or our licensors were the first to either (i) file any patent application related to our product candidates and other proprietary technologies we may develop or (ii) invent any of the inventions claimed in our or our licensors' patents or patent applications. Even where we have a valid and enforceable patent, we may not be able to exclude others from practicing the claimed invention where the other party can show that they used the invention in commerce before our filing date or the other party benefits from a compulsory license.

The Leahy-Smith Act also includes a number of significant changes that affect the way patent applications will be prosecuted and also may affect patent litigation. These include allowing third-party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent by USPTO administered post-grant proceedings, including PGR, IPR, and derivation proceedings. An adverse determination in any such submission or proceeding could reduce the scope or enforceability of, or invalidate, our patent rights, which could adversely affect our competitive position.

Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States 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. Thus, the Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our or licensors' patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Changes in U.S. patent law, or laws in other countries, could diminish the value of patents in general, thereby impairing our ability to protect our product candidates.

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involves a high degree of technological and legal complexity. Therefore, obtaining and enforcing biopharmaceutical patents is costly, time-consuming and inherently uncertain. Changes in either the patent laws or in the interpretations of patent laws in the United States and other countries may diminish our ability to protect our inventions, obtain, maintain, and enforce our intellectual property rights, and, more generally, could affect the value of our intellectual property and may increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. In addition, Congress or other foreign legislative bodies may pass patent reform legislation that is unfavorable to us or narrows the scope of our owned and licensed patents.

For example, the U.S. 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. In addition to increasing uncertainty with regard to our or our licensors' ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the U.S. federal courts, the USPTO, or similar authorities in foreign jurisdictions, the laws and regulations governing patents could change in unpredictable ways that would weaken our or our licensors' ability to obtain new patents or to enforce our existing patents and patents we might obtain in the future. We cannot predict how future decisions by Congress, the federal courts or the USPTO may impact the value of our patents.

We or our licensors may be subject to claims challenging the inventorship or ownership of our or our in-licensed patents and other intellectual property.

We may also be subject to claims that former employees, collaborators, or other third parties have an ownership interest in our in-licensed patents or other intellectual property as an inventor or co-inventor. The failure to name the proper inventors on a patent application can result in the patents issuing thereon being unenforceable. Inventorship disputes may arise from conflicting views regarding the contributions of different individuals named as inventors, the effects of foreign laws where foreign nationals are involved in the development of the subject matter of the patent, conflicting obligations of third parties involved in developing our product candidates or as a result of questions regarding co-ownership of potential joint inventions. For example, we may have inventorship disputes arise from conflicting obligations of consultants or others who are involved in developing our product candidates. Alternatively, or additionally, we may enter into agreements to clarify the scope of our rights in such intellectual property. Litigation may be necessary to defend against these and other claims challenging inventorship or ownership. If we or our licensors fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership or a right to use. Such an outcome could have a material adverse effect on our business. Even if we or our licensors are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing, or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. Such claims could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Patent terms may be inadequate to protect our competitive position on our product candidates for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years after its first effective filing date. Various extensions may be available, but the term of a patent, and the protection it affords, is limited. Even if patents directed to our product candidates are obtained, once the patent term has expired, we may be open to competition from competitive products. Given the amount of time required for the development, testing and regulatory review of product candidates, patents directed to our product candidates might expire before or shortly after such candidates are commercialized. As a result, our patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution.

If we or our licensors do not obtain patent term extension for our product candidates, our business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval, if any, of our product candidates, one or more of our U.S. patents may be eligible for limited patent term restoration under the Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. A maximum of one patent may be extended per FDA-approved product as compensation for the patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval and only those claims covering such approved drug product, a method for using it or a method for manufacturing it may be extended. Patent term extension may also be available in certain foreign countries upon regulatory approval of our product candidates. However, we or our licensors may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request. If we or our licensors are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, our competitors may obtain approval of competing products following our patent expiration, and our revenue could be reduced, possibly materially. Further, if this occurs, our competitors may take advantage of our investment in development and clinical trials by referencing our clinical and preclinical data and launch their product earlier than might otherwise be the case. If we do not have sufficient patent life to protect our products, our business and results of operations will be adversely affected.

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

Although we have in-licensed pending patent applications in the United States and certain other countries, filing, prosecuting and defending patents in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, the laws of some foreign countries, particularly certain developing 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 in-licensed inventions in all countries outside the United States or from selling or importing products made using our in-licensed inventions in and into the United States or other jurisdictions. Competitors may use our in-licensed technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we or our licensors have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our product candidates, and our or our licensors patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of many foreign countries do not favor the enforcement of patents, trade secrets, and other intellectual property protection, which could make it difficult in those jurisdictions for us to stop the infringement or misappropriation of our or our licensors' patents or other intellectual property rights, or marketing of competing products in violation of our proprietary rights. Proceedings to enforce our or our licensors' patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our or our licensors' patents at risk of being invalidated, held unenforceable, or interpreted narrowly and our or our licensors' patent applications at risk of not issuing and could provoke third parties to assert claims against us. We or our licensors may not prevail in any lawsuits that we or our licensors initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. Similarly, if our trade secrets are disclosed in a foreign jurisdiction, competitors worldwide could have access to our proprietary information and we may be without satisfactory recourse. Such disclosure could have a material adverse effect on our business. Accordingly, our or our licensors' 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.

In addition, certain countries, including China and India, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. 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. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patent. If we or our licensors are forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations and prospects may be adversely affected.

Because of the expense and uncertainty of litigation in certain foreign jurisdictions, we may conclude that even if a third-party is infringing our issued patents, any patents that may be issued as a result of our pending or future patent applications or other intellectual property rights, the risk-adjusted cost of bringing and enforcing such a claim or action, which typically last for years before they are concluded, may be too high or not in the best interest of our company or our stockholders, or it may be otherwise impractical or undesirable to enforce our intellectual property against some third parties. Our competitors or other third parties may be able to sustain the costs of complex patent litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. In such cases, we may decide that the monetary cost of such litigation and the diversion of the attention of our management and scientific personnel could outweigh any benefit we receive as a result of the proceedings and that the more prudent course of action is to simply monitor the situation or initiate or seek some other non-litigious action or solution. In addition, the uncertainties associated with litigation could compromise our ability to raise the funds necessary to continue our clinical trials, continue our internal research programs, in-license needed technology or other product candidates, or enter into development partnerships that would help us bring our product candidates to market.

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

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to the USPTO and various foreign patent offices at various points over the lifetime of our patents and/or applications. We have systems in place to remind us to pay these fees, and we rely on third parties to pay these fees when due. Additionally, the USPTO and various foreign patent offices require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply, and in many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with rules applicable to the particular jurisdiction. However, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If such an event were to occur, it could have a material adverse effect on our business.

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

In addition to the protection afforded by other types of intellectual property, we rely on the protection of our trade secrets, including unpatented know-how, technology and other proprietary information to maintain our competitive position. Although we have taken steps to protect our trade secrets and unpatented know-how, including entering into confidentiality agreements with third parties (including, but not limited to, contractors, collaborators, and outside scientific advisors), and confidential information and inventions agreements with employees, consultants, licensors and advisors, we cannot provide any assurances that all such agreements have been duly executed, and any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. We require our employees to enter into written confidentiality agreements that assign to us any inventions, developments, creative works and useful ideas of any description that are conceived of, reduced to practice or developed in the course of their employment. In addition, we require our third-party contractors to enter into a written non-disclosure agreement that requires the third party to not disclose certain of our confidential information in any manner or for any purpose other than as necessary and/or appropriate in connection with their obligations for a defined period of time, subject to certain exclusions. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets. We may need to share our proprietary information, including trade secrets, with our current and future business partners, collaborators, contractors and others located in countries at heightened risk of theft of trade secrets, including through direct intrusion by private parties or foreign actors, and those affiliated with or controlled by state actors.

Moreover, third parties may still obtain this information or may come upon this or similar information independently, and we would have no right to prevent them from using that technology or information to compete with us. If any of these events occurs or if we otherwise lose protection for our trade secrets, the value of this information may be greatly reduced and our competitive position would be harmed. If we or our licensors do not apply for patent protection prior to such publication or if we cannot otherwise maintain the confidentiality of our proprietary technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information may be jeopardized.

We may be subject to claims that we have wrongfully hired an employee from a competitor or that we or our employees have wrongfully used or disclosed alleged confidential information or trade secrets of their former employers.

We may be subject to claims that our employees, consultants, or independent contractors have wrongfully used or disclosed confidential information of third parties.

As is common in the biopharmaceutical industry, in addition to our employees, we engage the services of consultants to assist us in the development of our product candidates. Many of these consultants, and many of our employees, were previously employed at, or may have previously provided or may be currently providing consulting services to, other biopharmaceutical companies including our competitors or potential competitors. We may become subject to claims that we, our employees, independent contractors, or consultants inadvertently or otherwise used or disclosed trade secrets or other information proprietary to their former employers or their former or current clients. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, which could adversely affect our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to our management team and other employees.

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.

Our current or future trademarks or trade names may be challenged, infringed, circumvented, or declared generic or descriptive or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names or may be forced to stop using these names, which we need for name recognition by potential partners or customers in our markets of interest. During trademark registration proceedings, we may receive rejections of our applications by the USPTO or in other foreign jurisdictions. Although we would be given an opportunity to respond to those rejections, we may be unable to overcome such rejections. In addition, in the USPTO and in comparable agencies in many foreign jurisdictions, third parties are given an opportunity to oppose pending trademark applications and to seek to cancel registered trademarks. Opposition or cancellation proceedings may be filed against our trademarks, and our trademarks may not survive such proceedings. If we are unable to establish name recognition based on our trademarks and trade names, we may not be able to compete effectively and our business may be adversely affected. We may license our trademarks and trade names to third parties, such as distributors. Though these license agreements may provide guidelines for how our trademarks and trade names may be used, a breach of these agreements or misuse of our trademarks and tradenames by our licensees may jeopardize our rights in or diminish the goodwill associated with our trademarks and trade names.

Moreover, any name we have proposed to use with product candidates in the United States may need FDA approval, regardless of whether we have registered it, or applied to register it, as a trademark. Similar requirements exist in Europe. The FDA typically conducts a review of proposed product names, including an evaluation of potential for confusion with other product names. If the FDA (or an equivalent administrative body in a foreign jurisdiction) objects to any of our proposed proprietary product names, we may be required to expend significant additional resources in an effort to identify a suitable substitute name that would qualify under applicable trademark laws, not infringe the existing rights of third parties and be acceptable to the FDA. Furthermore, in many countries, owning and maintaining a trademark registration may not provide an adequate defense against a subsequent infringement claim asserted by the owner of a senior trademark. At times, competitors or other third parties 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 registered or unregistered trademarks or trade names. If we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks.

Risks Related to Employee Matters and Managing our Growth

If we are unable to establish sales or marketing capabilities or enter into agreements with third parties to sell or market our product candidates, we may not be able to successfully sell or market our product candidates that obtain regulatory approval.

We currently do not have and have never had a marketing or sales team. In order to commercialize any product candidates, if approved, we must build marketing, sales, distribution, managerial and other non-technical capabilities or make arrangements with third parties to perform these services for each of the territories in which we may have approval to sell or market our product candidates. We may not be successful in accomplishing these required tasks.

Establishing an internal sales or marketing team with technical expertise and supporting distribution capabilities to commercialize our product candidates will be expensive and time-consuming, and will require significant attention of our executive officers to manage. Any failure or delay in the development of our internal sales, marketing and distribution capabilities could adversely impact the commercialization of any of our product candidates that we obtain approval to market, if we do not have arrangements in place with third parties to provide such services on our behalf. Alternatively, if we choose to collaborate, either globally or on a territory-by-territory basis, with third parties that have direct sales forces and established distribution systems, either to augment our own sales force and distribution systems or in lieu of our own sales force and distribution systems, we will be required to negotiate and enter into arrangements with such third parties relating to the proposed collaboration. If we are unable to enter into such arrangements when needed, on acceptable terms, or at all, we may not be able to successfully commercialize any of our product candidates that receive regulatory approval, or any such commercialization may experience delays or limitations. If we are unable to successfully commercialize our approved product candidates, either on our own or through collaborations with one or more third parties, our future product revenue will suffer and we may incur significant additional losses.

Our success is highly dependent on our ability to attract and retain highly skilled executive officers and employees.

To succeed, we must recruit, retain, manage and motivate qualified clinical, scientific, technical and management personnel, and we face significant competition for experienced personnel. We are highly dependent on the principal members of our management and scientific and medical staff. If we do not succeed in attracting and retaining qualified personnel, particularly at the management level, it could adversely affect our ability to execute our business plan and harm our operating results. In particular, the loss of one or more of our executive officers could be detrimental to us if we cannot recruit suitable replacements in a timely manner. The competition for qualified personnel in the biotechnology field is intense and as a result, we may be unable to continue to attract and retain qualified personnel necessary for the future success of our business. We could in the future have difficulty attracting experienced personnel to our company and may be required to expend significant financial resources in our employee recruitment and retention efforts.

Many of the other biotechnology companies that we compete against for qualified personnel have greater financial and other resources, different risk profiles and a longer history in the industry than we do. They also may provide more diverse opportunities and better prospects for career advancement. Some of these characteristics may be more appealing to high-quality candidates than what we have to offer. If we are unable to continue to attract and retain high-quality personnel, the rate and success at which we can discover, develop and commercialize our product candidates will be limited and the potential for successfully growing our business will be harmed.

In order to successfully implement our plans and strategies, we will need to grow the size of our organization, and we may experience difficulties in managing this growth.

As of December 31, 2023, we had ten full-time employees. In order to successfully implement our development and commercialization plans and strategies, we expect to need additional managerial, operational, sales, marketing, financial and other personnel. Future growth would impose significant added responsibilities on members of management, including:

- identifying, recruiting, integrating, maintaining and motivating additional employees;
- managing our internal development efforts effectively, including the clinical, FDA, EMA and other comparable foreign regulatory agencies' review process of our product candidates and any other product candidate we develop, while complying with any contractual obligations to contractors and other third parties we may have; and
- improving our operational, financial and management controls, reporting systems and procedures.

Our future financial performance and our ability to successfully develop and, if approved, commercialize any of our current product candidates and any other product candidate we may develop will depend, in part, on our ability to effectively manage any future growth, and our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to devote a substantial amount of time to managing these growth activities.

We currently rely, and for the foreseeable future will continue to rely, in substantial part on certain independent organizations, advisors and consultants to provide certain services, including key aspects of clinical development and manufacturing. We cannot assure you that the services of independent organizations, advisors and consultants will continue to be available to us on a timely basis when needed, or that we can find qualified replacements. In addition, if we are unable to effectively manage our outsourced activities or if the quality or accuracy of the services provided by third party service providers is compromised for any reason, our clinical trials may be extended, delayed or terminated, and we may not be able to obtain marketing approval of any current or future product candidates or otherwise advance our business. We cannot assure you that we will be able to manage our existing third party service providers or find other competent outside contractors and consultants on economically reasonable terms, or at all.

If we are not able to effectively expand our organization by hiring new employees and/or engaging additional third party service providers, we may not be able to successfully implement the tasks necessary to further develop and commercialize our product candidates and any future product candidates and, accordingly, may not achieve our research, development and commercialization goals.

Risks Related to This Offering and Ownership of Our Common Stock

We may not be able to maintain compliance with Nasdaq's listing standards, which could limit stockholders' ability to trade our common stock.

On January 31, 2024, we completed the Direct Listing, pursuant to which we registered 4,806,226 shares of our common stock held by certain stockholders, or their permitted transferees (the "Registered Stockholders"). As a listed company on the Nasdaq, we are required to meet certain financial, public float, bid price and liquidity standards on an ongoing basis in order to continue the listing of our common stock. If we fail to meet these continued listing requirements, our common stock may be subject to delisting, which could materially impact the liquidity of our common stock making it more challenging to buy and sell shares of our common stock.

Our common stock have a very short trading history on Nasdaq. An active trading market may not develop or continue to be liquid and the market price of shares of our common stock may be volatile.

Our common stock is listed and traded on Nasdaq. Prior to the listing on Nasdaq, there was not a public market for any of our securities, and an active market for our common stock may not develop or be sustained, which could depress the market price of shares of our common stock and could affect the ability of our stockholders to sell our common stock. In the absence of an active public trading market, investors may not be able to liquidate their investments in our common stock. An inactive market may also impair our ability to raise capital by selling shares of our common stock, our ability to motivate our employees through equity incentive awards and our ability to acquire other companies, products or technologies by using shares of our common stock as consideration.

In addition, we cannot predict the prices at which our common stock may trade on Nasdaq, and the market price of our common stock may fluctuate significantly in response to various factors, some of which are beyond our control.

The public price of our common stock could be subject to wide fluctuations in response to the risk factors described in this prospectus and others beyond our control, including:

- changes in the industries in which we operate;
- variations in our operating performance and the performance of our competitors in general;
- actual or anticipated fluctuations in our quarterly or annual operating results;
- publication of research reports by securities analysts about us or our competitors or our industry;
- the public's reaction to our press releases, our other public announcements and our filings with the SEC;
- our failure or the failure of our competitors to meet analysts' projections or guidance that we or our competitors may give to the market;
- additions and departures of key personnel;
- changes in laws and regulations affecting our business;
- commencement of, or involvement in, litigation involving us;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- the volume of shares of our common stock available for public sale; and
- general economic and political conditions such as recessions, interest rates, fuel prices, foreign currency fluctuations, international tariffs, social, political and economic risks and acts of war or terrorism.

In addition, securities exchanges have experienced price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. Stock prices of many companies have fluctuated in a manner often unrelated to the operating performance of those companies. These fluctuations may be even more pronounced in the trading market for our common stock shortly following the listing of our common stock on Nasdaq as a result of the supply and demand forces described above. In the past, stockholders have instituted securities class action litigation following periods of market volatility. If we were to become involved in securities litigation, it could subject us to substantial costs, divert resources and the attention of management from our business and harm our business, results of operations and financial condition.

Future sales of common stock by our Registered Stockholders and other stockholders could cause our share price to decline.

Our common stock is listed and traded on Nasdaq. Prior to listing on Nasdaq, there was no public market for our common stock and there has not been a sustained history of trading in our common stock in "over-the-counter" markets. While our common stock may be sold by the Registered Stockholders pursuant to this prospectus or by our stockholders pursuant to other current or future effective registration statements or in accordance with Rule 144 under the Securities Act or other exemption from registration, there can be no assurance that any Registered Stockholders or other existing stockholders will sell any of their shares of common stock and there may initially be a lack of supply of, or demand for, our common stock on Nasdaq. As described herein, certain shares of our common stock outstanding as of the date hereof will be registered under this registration statement. There can be no assurance that the Registered Stockholders and other stockholders will not sell all of their shares of common stock (including, upon exercise by GYBL, the shares of common stock underlying the warrants we issued to GYBL), resulting in an oversupply of our common stock on Nasdaq. In the case of a lack of supply of our common stock, the trading price of our common stock may rise to an unsustainable level. Further, institutional investors may be discouraged from purchasing our common stock if they are unable to purchase a block of our common stock in the open market due to a potential unwillingness of our existing stockholders to sell a sufficient amount of common stock at the price offered by such institutional investors and the greater influence individual investors have in setting the trading price. If institutional investors are unable to purchase our common stock, the market for our common stock may be more volatile without the influence of long-term institutional investors holding significant amounts of our common stock. In the case of a lack of market demand for our common stock, the trading price of our common stock could decline significantly and rapidly after our listing. Therefore, an active, liquid and orderly trading market for our common stock may not initially develop or be sustained, which could significantly depress the public price of our common stock and/or result in significant volatility, which could affect your ability to sell your shares of common stock.

We have 2,500 shares of Series C Preferred Stock with super voting rights.

Our board of directors and stockholders have each approved the creation and issuance of an aggregate of 2,500 (after giving effect to the Reverse Stock Split) Series C Preferred Stock, all of which Series C Preferred Stock were issued to Pete O’Heeron, our founder and Chief Executive Officer, in conjunction with the Direct Listing.

The Series C Preferred Stock (i) have no dividend rights, (ii) convert into common stock upon any transfer from the initial holder, (iii) have a liquidation preference of \$18.00 per share (subject to appropriate adjustment in the event of any stock split, combination, or other similar recapitalization) upon our liquidation, dissolution or winding up and (iv) are entitled to 13,000 votes for each share of Series C Preferred Stock.

The Series C Preferred Stock are subject to an irrevocable proxy issued by Pete O’Heeron, the holder of all of the Series C Preferred Stock, in favor and for the benefit of, our board of directors, granting our board of directors the irrevocable proxy, for as long as the Series C Preferred Stock remain outstanding, to vote all of the Series C Preferred Stock on all matters on which the Series C Preferred Stock are entitled to vote, in any manner that our board of directors may determine in its sole and absolute discretion; provided, however, that such irrevocable proxy shall not, without the written consent of Pete O’Heeron, permit our board of directors to vote the Series C Preferred Stock with respect to any proposal to amend, delete or waive any rights of Pete O’Heeron with respect to the Series C Preferred Stock as set forth in our amended and restated certificate of incorporation. In light of the superior voting rights associated with the Series C Preferred Stock, the irrevocable proxy is intended to ensure that such superior voting rights are utilized in our best interest and to avoid or mitigate conflicts that may arise in the future for Pete O’Heeron as an individual stockholder employee.

See “*Description of Capital Stock—Series C Preferred Stock*” for additional information regarding our Series C Preferred Stock.

In addition to the dilutive effect on the voting power and value of our common stock, the foregoing structure of our capital stock may render our common stock ineligible for inclusion in certain securities market indices, and thus adversely affect the price and liquidity of, and public sentiment regarding, our common stock or other securities. The existence of, and voting rights associated with, our Series C Preferred Stock, either alone or in conjunction with certain of the other provisions of our amended and restated certificate of incorporation, such as the requirement to have a staggered board, could also have the effect of delaying, deterring or preventing a change in our control or make the removal of our management more difficult.

We are a “controlled company” within the meaning of The Nasdaq Stock Market Rules because our insiders beneficially own more than 50% of the voting power of our outstanding voting securities.

Our founder and Chief Executive Officer, Pete O’Heeron, collectively beneficially owns approximately 60% of the voting power of our outstanding voting securities and we are a “controlled company” within the meaning of the listing rules of The Nasdaq Stock Market LLC. We may rely on certain exemptions from corporate governance rules, including an exemption from the rule that a majority of our board of directors must be independent directors. Although we currently do not intend to rely on the “controlled company” exemption under the Nasdaq listing rules, we could elect to rely on this exemption in the future. In the event that we elected to rely on the “controlled company” exemption, a majority of the members of our board of directors might not be independent directors, and our governance and nominating and compensation committees might not consist entirely of independent directors. Our status as a controlled company could cause our shares of common stock to be less attractive to certain investors or otherwise harm our trading price. As a result, you would not have the same protection afforded to shareholders of companies that are subject to these corporate governance requirements.

You may be diluted by future issuances of preferred stock or additional common stock in connection with our incentive plans, acquisitions or otherwise; future sales of such shares in the public market, or the expectations that such sales may occur, could lower our stock price.

Our amended and restated certificate of incorporation authorizes us to issue shares of common stock and options, rights, warrants and appreciation rights relating to our common stock for the consideration and on the terms and conditions established by our board of directors in its sole discretion. We could issue a significant number of shares of common stock in the future in connection with investments or acquisitions. Any of these issuances could dilute our existing stockholders, and such dilution could be significant. Moreover, such dilution could have a material adverse effect on the market price for the shares of our common stock.

The future issuance of shares of preferred stock with voting rights may adversely affect the voting power of the holders of shares of our common stock, either by diluting the voting power of our common stock if the preferred stock votes together with the common stock as a single class, or by giving the holders of any such preferred stock the right to block an action on which they have a separate class vote, even if the action were approved by the holders of our shares of our common stock.

The future issuance of shares of preferred stock with dividend or conversion rights, liquidation preferences or other economic terms favorable to the holders of preferred stock could adversely affect the market price for our common stock by making an investment in the common stock less attractive. For example, investors in the common stock may not wish to purchase common stock at a price above the conversion price of a series of convertible preferred stock because the holders of the preferred stock would effectively be entitled to purchase common stock at the lower conversion price, causing economic dilution to the holders of common stock.

Because we have no current plans to pay cash dividends on our common stock, you may not receive any return on investment unless you sell your common stock for a price greater than that which you paid for it.

We currently intend to retain all available funds and any future earnings to fund the development, commercialization and growth of our business, and therefore we do not anticipate declaring or paying any cash dividends on our common stock in the foreseeable future. Any future determination to declare dividends will be made at the discretion of our board of directors and will depend on our financial condition, operating results, capital requirements, general business conditions and other factors that our board of directors may deem relevant. Our future ability to pay cash dividends on our common stock may also be limited by the terms of any future debt securities or credit facility. As a result, capital appreciation, if any, of the common stock you purchase in this offering will be your sole source of gain for the foreseeable future.

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

We are an “emerging growth company,” as defined in the JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of certain exemptions and relief from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including (i) not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, (ii) having the option of delaying the adoption of certain new or revised financial accounting standards, (iii) reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements and (iv) exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We may take advantage of these exemptions until such time that we are no longer an emerging growth company. Accordingly, the information contained herein may be different than the information you receive from other public companies in which you hold stock. Further, pursuant to Section 107 of the JOBS Act, we have elected to take advantage of the extended transition period for complying with new or revised accounting standards until those standards would otherwise apply to private companies. As a result, our operating results and financial statements may not be comparable to the operating results and financial statements of other companies who have adopted the new or revised accounting standards.

We will remain an emerging growth company until the earliest of (i) December 31, 2028, (ii) the last day of the fiscal year in which we have total annual gross revenue of at least \$1.235 billion, (iii) the last day of the fiscal year in which we are deemed to be a “large accelerated filer” as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock held by non-affiliates was \$700.0 million or more as of the last business day of the second fiscal quarter of such year or (iv) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period.

We are also a “smaller reporting company” as defined in the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies until the fiscal year following the determination that our voting and non-voting common stock held by non-affiliates is \$250 million or more measured on the last business day of our second fiscal quarter, or our annual revenues are less than \$100 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is \$700 million or more measured on the last business day of our second fiscal quarter.

It is possible that some investors will find our common stock less attractive as a result of the foregoing, which may result in a less active trading market for our common stock and higher volatility in our stock price.

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

As of December 31, 2023, our executive officers, directors and five percent or greater stockholders and their respective affiliates, beneficially own, in the aggregate, approximately 19% of our outstanding common stock on an as converted basis. To the extent that the same group continue to own a significant percentage of our common stock following this offering, these stockholders, if they act together, will be able to control the management and affairs of our company and most matters requiring stockholder approval, including the election of directors, amendments of our organizational documents and approval of any merger, sale of substantially all our assets or other significant corporate transactions. This concentration of ownership may prevent or discourage unsolicited acquisition proposals or offers for our common stock that you or other stockholders may feel are in your or their best interest as one of our stockholders.

Provisions of our amended and restated certificate of incorporation and bylaws may delay or prevent a take-over that may not be in the best interests of our stockholders.

Provisions of our amended and restated certificate of incorporation and bylaws may be deemed to have anti-takeover effects, which include, among others, (i) the existence of our Series C Preferred Stock entitled to 13,000 votes per share of Series C Preferred Stock, as more particularly described elsewhere in this prospectus, (ii) a classified board of directors serving staggered three-year terms, (iii) who can fill vacancies of our board of directors, (iv) supermajority voting thresholds for the removal of members of our board, and (v) when and by whom special meetings of our stockholders may be called, and may delay, defer or prevent a takeover attempt.

In addition, our amended and restated certificate of incorporation authorize the issuance of shares of preferred stock which will have such rights and preferences determined from time to time by our board of directors. Our board of directors may, without stockholder approval (except as may be required under Nasdaq rules), issue additional preferred shares with dividends, liquidation, conversion, voting or other rights that could adversely affect the voting power or other rights of the holders of our common stock. Further, our amended and restated certificate of incorporation authorizes the issuance of “blank check” preferred stock that our board of directors could use to implement a stockholder rights plan (also known as a “poison pill”).

Our amended and restated certificate of incorporation provides for an exclusive forum in the Court of Chancery of the State of Delaware for certain 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, (i) the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) shall, to the fullest extent permitted by law, be the sole and exclusive forum for (a) any derivative action or proceeding brought on our behalf, (b) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (c) any action arising pursuant to any provision of the General Corporation Law of the State of Delaware, or the DGCL, our certificate of incorporation or our bylaws or (d) any action asserting a claim governed by the internal affairs doctrine and (ii) 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 or causes of action arising under the Securities Act, including all causes of action asserted against any defendant to such complaint. Pursuant to our planned amended and restated certificate of incorporation, any person or entity purchasing or otherwise acquiring or holding any interest in shares of our common stock will be deemed to have had notice of and consented to the forum selection clause in our planned amended and restated certificate of incorporation described in this paragraph.

The foregoing provision would not preclude stockholders that assert claims under the Exchange Act from bringing such claims in federal court, to the extent that the Exchange Act confers exclusive federal jurisdiction over such claims, subject to applicable law.

We believe our choice of forum provision may benefit us by providing increased consistency in the application of Delaware law by chancellors and judges particularly experienced in resolving corporate disputes, efficient administration of cases on a more expedited schedule relative to other forums and protection against the burdens of multi-forum litigation. However, our choice of forum provision may impose additional litigation costs on stockholders in pursuing claims and may limit a stockholder's ability to bring a claim in a judicial forum that it believes to be favorable for disputes with us or any of our directors, officers or other employees, which may discourage lawsuits with respect to such claims. In addition, while the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the choice of forum provision, and there can be no assurance that such provision will be enforced by a court in those other jurisdictions. If a court were to find the choice of forum provision in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

General Risks

Reports published by analysts, including projections in those reports that differ from our actual results, could adversely affect the price and trading volume of our common stock.

Securities research analysts may establish and publish their own periodic projections for our Company. These projections may vary widely and may not accurately predict the results we actually achieve. The price of our common stock may decline if our actual results do not match the projections of these securities research analysts. Similarly, if one or more of the analysts who write reports on us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price could decline. If one or more of these analysts ceases coverage of us or fails to publish reports on us regularly, our stock price or trading volume could decline.

Our internal computer systems, or those of any of our CROs, manufacturers, other contractors, consultants, collaborators or potential future collaborators, may fail or suffer security or data privacy breaches or other unauthorized or improper access to, use of, or destruction of our proprietary or confidential data, employee data or personal data, which could result in additional costs, loss of revenue, significant liabilities, harm to our brand and material disruption of our operations.

Despite the implementation of security measures, our internal computer systems and those of our current and any future CROs and other contractors, consultants, collaborators and third-party service providers, are vulnerable to damage from computer viruses, cybersecurity threats, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failure. Because the techniques used to obtain unauthorized access to, or to sabotage, 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. If such an event were to occur and cause interruptions in our operations or result in the unauthorized acquisition of or access to personally identifiable information or individually identifiable health information (violating certain privacy laws such as HIPAA and GDPR), it could result in a material disruption of our drug discovery and development programs and our business operations, whether due to a loss of our trade secrets or other similar disruptions. Some of the federal, state and foreign government requirements include obligations of companies to notify individuals of security breaches involving particular personally identifiable information, which could result from breaches experienced by us or by our vendors, contractors or organizations with which we have formed strategic relationships. Notifications and follow-up actions related to a security breach could impact our reputation, cause us to incur significant costs, including legal expenses and remediation costs. For example, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the lost data. We also rely on third parties for certain portions of our manufacturing process, and similar events relating to their computer systems could also have a material adverse effect on our business. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data, or inappropriate disclosure of confidential or proprietary information, we could be exposed to litigation and governmental investigations, the further development and commercialization of our product candidates could be delayed, and we could be subject to significant fines or penalties for any noncompliance with certain state, federal and/or international privacy and security laws.

Our insurance policies may not be adequate to compensate us for the potential losses arising from any such disruption, failure or security breach. In addition, such insurance may not be available to us in the future on economically reasonable terms, or at all. Further, our insurance may not cover all claims made against us and could have high deductibles in any event, and defending a suit, regardless of its merit, could be costly and divert management attention.

Our operations are vulnerable to interruption by fire, severe weather conditions, power loss, telecommunications failure, terrorist activity and other events beyond our control, which could harm our business.

Our facility is located in a region which experiences severe weather from time to time. We have not undertaken a systematic analysis of the potential consequences to our business and financial results from a major tornado, flood, fire, earthquake, power loss, terrorist activity or other disasters and do not have a recovery plan for such disasters. In addition, we do not carry sufficient insurance to compensate us for actual losses from interruption of our business that may occur, and any losses or damages incurred by us could harm our business. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements that can involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations and financial position, business strategy, prospective products, product approvals, research and development costs, future revenue, timing and likelihood of success, plans and objectives of management for future operations, future results of anticipated products and prospects, plans and objectives of management are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “anticipate,” “believe,” “contemplate,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “potential,” “predict,” “project,” “should,” “target,” “will,” or “would” or the negative of these terms or other similar expressions, although not all forward-looking statements contain these words. Forward-looking statements contained in this prospectus include, but are not limited to, statements about:

- the timing, progress and results of preclinical studies and clinical trials for our current and future product candidates, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available and our research and development programs;
- the timing, scope or likelihood of regulatory submissions, filings, and approvals, including final regulatory approval of our product candidates;
- our ability to develop and advance product candidates into, and successfully complete, clinical trials;
- our expectations regarding the size of the patient populations for our product candidates, if approved for commercial use;
- the implementation of our business model and our strategic plans for our business, product candidates and technology;
- our commercialization, marketing and manufacturing capabilities and strategy;
- the pricing and reimbursement of our product candidates, if approved;
- the rate and degree of market acceptance and clinical utility of our product candidates, in particular, and cell therapy, in general;
- our ability to establish or maintain collaborations or strategic relationships or obtain additional funding;
- our competitive position;
- the scope of protection we and/or our licensors are able to establish and maintain for intellectual property rights covering our product candidates;
- developments and projections relating to our competitors and our industry;
- our estimates regarding expenses, future revenue, capital requirements and needs for additional financing;
- the period over which we estimate our existing cash and cash equivalents will be sufficient to fund our future operating expenses and capital expenditure requirements; and
- the impact of laws and regulations.

We have based these forward-looking statements largely on our current expectations and projections about our business, the industry in which we operate and financial trends that we believe may affect our business, financial condition, results of operations and prospects, and these forward-looking statements are not guarantees of future performance or development. These forward-looking statements speak only as of the date of this prospectus and are subject to a number of risks, uncertainties and assumptions described in the section titled “*Risk Factors*” and elsewhere in this prospectus. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein until after we distribute this prospectus, whether as a result of any new information, future events or otherwise.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and you are cautioned not to unduly rely upon these statements.

MARKET AND INDUSTRY DATA

This prospectus includes estimates regarding market and industry data. Unless otherwise indicated, information concerning our industry and the markets in which we operate, including our general expectations, market position, market opportunity, and market size, are based on our management's knowledge and experience in the markets in which we operate, together with currently available information obtained from various sources, including publicly available information, industry reports and publications, surveys, our customers, trade and business organizations, and other contacts in the markets in which we operate. Certain information is based on management estimates, which have been derived from third-party sources, as well as data from our internal research.

In presenting this information, we have made certain assumptions that we believe to be reasonable based on such data and other similar sources and on our knowledge of, and our experience to date in, the markets in which we operate. While we believe the estimated market and industry data included in this prospectus is generally reliable, such information is inherently uncertain and imprecise. Market and industry data is subject to change and may be limited by the availability of raw data, the voluntary nature of the data gathering process, and other limitations inherent in any statistical survey of such data. In addition, projections, assumptions, and estimates of the future performance of the markets in which we operate are necessarily subject to uncertainty and risk due to a variety of factors, including those described in "*Risk Factors*" and "*Cautionary Note Regarding Forward-Looking Statements*." These and other factors could cause results to differ materially from those expressed in the estimates made by third parties and by us. Accordingly, you are cautioned not to place undue reliance on such market and industry data or any other such estimates.

The source of certain statistical data, estimates, and forecasts contained in this prospectus are the following independent industry publications or reports:

- "**Degenerative Disc Disease Therapeutics Global Market Analysis, Insights and Forecast, 2022-2029**" Fortune Business Insights;
- "**Global Regenerative Medicine Market 2022-2029**" Fortune Business Insights;
- "**Global Multiple Sclerosis Drugs Market 2022-2029**" Fortune Business Insights; and
- "**Global Wound Care Market 2022-2029**" Fortune Business Insights.

The content of the above sources, except to the extent specifically set forth in this prospectus, does not constitute a portion of this prospectus and is not incorporated herein.

TRADEMARKS, SERVICE MARKS AND TRADENAMES

We own or otherwise have rights to the trademarks, including those mentioned in this prospectus, used in conjunction with the operation of our business. This prospectus includes our own trademarks, which are protected under applicable intellectual property laws, as well as trademarks, service marks and tradenames of other entities, which are the property of their respective owners. Solely for convenience, trademarks, trade names and service marks referred to in this prospectus may appear without the ®, TM or SM symbols, but such references are not intended to indicate, in any way, that the applicable licensor will not assert, to the fullest extent under applicable law, its rights to these trademarks, service marks and tradenames. We do not intend our use or display of other entities' trademarks, service marks or tradenames to imply a relationship with, or endorsement or sponsorship of us by, any other entities.

USE OF PROCEEDS

We estimate that the net proceeds of this offering, after deducting placement agent fees and estimated expenses payable by us, will be approximately \$18.4 million, assuming the sale of all Units offered hereby at an assumed offering price of \$11.10 per Unit, which represents the closing sale price of our common stock on The Nasdaq Global Market on April 23, 2024, and further assuming no exercise of the Warrants issued in connection with this offering.

We currently intend to use the net proceeds received from this offering for general corporate purposes, including to hire key personnel, conduct research and development, and for working capital.

Changing circumstances may cause us to consume capital significantly faster than we currently anticipate. The amounts and timing of our actual expenditures will depend upon numerous factors, including the development efforts and the overall economic environment. Therefore, our management will retain broad discretion over the use of the proceeds from this offering. We may ultimately use the proceeds for different purposes than what we currently intend. Pending any ultimate use of any portion of the proceeds from this offering, if the anticipated proceeds will not be sufficient to fund all the proposed purposes, our management will determine the order of priority for using the proceeds, as well as the amount and sources of other funds needed.

Pending our use of the net proceeds from this offering, we may invest the net proceeds in a variety of capital preservation investments, including short-term, investment grade, interest bearing instruments and U.S. government securities.

DIVIDEND POLICY

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings to fund the development, commercialization and growth of our business, and therefore we do not anticipate declaring or paying any cash dividends on our common stock in the foreseeable future. Any future determination as to the declaration and payment of dividends, if any, will be at the discretion of our board of directors. Any such determination will also depend upon our business prospects, operating results, financial condition, capital requirements, general business conditions and other factors that our board of directors may deem relevant. Our future ability to pay cash dividends on our common stock may also be limited by the terms of any future debt securities or credit facility.

DILUTION

If you invest in our Units in this offering, your interest will be diluted to the extent of the difference between \$11.10, the assumed offering price per share of our common stock included as part of the Units (without assigning any value to the Warrants), and the pro forma as adjusted net tangible book value per share of our common stock immediately after this offering.

Our net tangible book value as of December 31, 2023, was approximately \$1.3 million, and at such time we had no shares of common stock outstanding.

Our pro forma net tangible book value as of December 31, 2023, was approximately \$4.1 million, or \$0.12 per share of common stock, after giving effect to (i) the conversion of all outstanding shares of non-voting common stock, Series B Preferred Stock, and Series B-1 Preferred Stock into shares of voting common stock upon completion of our Direct Listing on January 31, 2024, and (ii) the sale of 227,057 shares of common stock to GEM for net proceeds of approximately \$2.8 million (collectively, (i) and (ii), the "Pro Forma Adjustments"). Net tangible book value per share represents our total tangible assets less our total liabilities, divided by the number of outstanding shares of common stock.

After giving further effect to our sale of 1,801,801 Units in this offering at an assumed offering price of \$11.10 per Unit, and after deducting estimated placement agent discounts and commissions and estimated offering expenses payable by us, and assuming no exercise of the Warrants, our pro forma as adjusted net tangible book value as of December 31, 2023, would have been \$22.4 million or \$0.65 per share. This represents an immediate dilution in net tangible book value of \$10.37 per share to purchasers of common stock included in the Units sold in this offering, as illustrated in the following table:

Assumed public offering price per Unit attributable to common stock		\$	11.10
Net tangible book value per share as of December 31, 2023			-
Pro forma net tangible book value per share as of December 31, 2023	\$	0.12	
Increase in net tangible book value per share attributable to Pro Forma Adjustments	\$	0.12	
Increase in net tangible book value per share attributable to new investors in this offering	\$	0.53	
Pro forma, as adjusted for this offering, net tangible book value per share as of December 31, 2023		\$	0.65
Dilution per share to new investors		\$	10.45

The above discussion and tables are based on no shares of common stock outstanding as of December 31, 2023. As of December 31, 2023, prior to giving effect to the Pro-Forma Adjustments, we had 32,492,068 shares of common stock issuable upon the conversion of all outstanding shares of Non-voting Common Stock, Series B Preferred Stock, and Series B-1 Preferred Stock into shares of common stock upon completion of our Direct Listing on January 31, 2024.

A \$1.00 increase or decrease in the assumed public offering price of \$11.10 per Unit would increase or decrease our pro forma as adjusted net tangible book value of common stock after this offering by \$1.7 million and the dilution per share of common stock to new investors by \$0.95, assuming the number of Units offered by us, as set forth on the cover page of this prospectus, remains the same, after deducting the estimated placement agent discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of Units we are offering. An increase or decrease of 100,000 in the number of Units offered by us would increase or decrease our pro forma as adjusted net tangible book value after this offering by approximately \$1.0 million and increase or decrease pro forma as adjusted net tangible book value per share of common stock after this offering by \$0.03 per share of common stock and would increase or decrease the dilution per share of common stock to new investors by \$0.03, assuming the assumed public offering price remains the same, and after deducting estimated placement agent discounts and commissions and estimated offering expenses payable by us.

To the extent that shares are issued upon the exercise of outstanding options and warrants or shares are issued under our equity incentive plan, you will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities may result in further dilution to our stockholders.

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization as of December 31, 2023, as follows.

- on an actual basis;
- on a pro forma basis after giving effect to the Pro Forma Adjustments; and
- on an as adjusted pro forma basis to give effect to (i) the Pro Forma Adjustment and (ii) our sale of 1,801,801 Units in this offering at an assumed offering price of \$11.10 per Unit, and after deducting estimated placement agent discounts and commissions and estimated offering expenses payable by us, and assuming no exercise of the Warrants.

The share numbers in the table below have been adjusted to reflect the Reverse Stock Split and the related adjustments to our authorized capital stock.

This table should be read in conjunction with, and is qualified in its entirety by reference to, our financial statements and related notes appearing elsewhere in this prospectus.

	<u>As of December 31, 2023</u>		<u>Pro Forma As Adjusted</u>
	<u>Actual</u>	<u>Pro Forma</u>	
	<u>(in thousands, except for share and per share amounts)</u>		
Cash and cash equivalents	\$ 9,163	\$ 11,982	\$ 30,356
Stockholders' equity:			
Preferred Stock, \$0.00001 par value per share; 20,000,000 total shares authorized, actual and pro forma and pro forma as adjusted; 8,750,000 Series A Preferred shares authorized, issued and outstanding, actual; no Series A Preferred shares authorized, issued and outstanding, pro forma and pro forma as adjusted	—	—	—
Preferred Stock, \$0.00001 par value per share; 20,000,000 total shares authorized, actual and pro forma and pro forma as adjusted; 5,000,000 Series B Preferred shares authorized, actual; 4,171,445 Series B Preferred shares issued and outstanding, actual; no Series B Preferred shares authorized, issued and outstanding, pro forma	—	—	—
Preferred Stock, \$0.00001 par value per share; 20,000,000 total shares authorized, actual and pro forma; 5,000,000 Series B-1 Preferred shares authorized, actual and pro forma and pro forma as adjusted; 89,781 Series B-1 Preferred shares issued and outstanding, actual; no Series B-1 Preferred shares authorized, issued and outstanding, pro forma and pro forma as adjusted	—	—	—
Preferred Stock, \$0.00001 par value per share; 20,000,000 total shares authorized, actual and pro forma and pro forma as adjusted; no Series C Preferred shares authorized, issued and outstanding, actual; 2,500 Series C Preferred shares authorized, issued and outstanding, pro forma and pro forma as adjusted	—	—	—
Non-voting Common stock, \$0.00001 par value per share; 30,000,000 shares authorized, actual and pro forma and pro forma as adjusted; 28,230,842 shares issued and outstanding, actual; no shares issued and outstanding, pro forma and pro forma as adjusted	1	—	—
Voting Common Stock, \$0.00001 par value per share; 100,000,000 shares authorized, actual and pro forma and pro forma as adjusted; no shares issued or outstanding, actual; 32,719,125 and 34,520,926 shares issued and outstanding, respectively, pro forma and pro forma as adjusted	—	1	1
Additional paid-in capital	25,609	28,428	46,802
Accumulated deficit	(24,357)	(24,357)	(24,357)
Total stockholders' equity	\$ 1,253	\$ 4,072	\$ 22,446
Total capitalization	\$ 1,253	\$ 4,072	\$ 22,446

The number of shares of our voting common stock reflected in our actual, pro forma, and pro forma as adjusted information set forth in the table above excludes:

- 4,005,375 shares of common stock issuable upon exercise of stock options outstanding under our 2022 Stock Plan (as defined herein) as of March 31, 2024;
- 8,494,625 shares of common stock reserved for issuance under our 2022 Stock Plan;
- 10,321 shares of common stock underlying warrants that were issued in connection with the issuance of certain shares of the Series B-1 Preferred Stock;
- 1,299,783 shares of common stock underlying warrants to purchase common stock that were issued to GYBL upon the Direct Listing pursuant to the GEM SPA; and
- 1,801,801 shares of common stock underlying Warrants to purchase common stock that will be issued to investors in this offering.

MANAGEMENT

Executive Officers

The following table sets forth certain information, as of the date of this prospectus, concerning our executive officers:

Name	Age	Position
Pete O’Heeron, MSHA	60	Founder, Chairperson and Chief Executive Officer
Mark Andersen, CPA CFA	53	Chief Financial Officer
Hamid Khoja, Ph.D.	54	Chief Scientific Officer
Ruben A. Garcia	47	General Counsel

The following is a biographical summary of the experience of our executive officers.

Pete O’Heeron, MSHA. Pete O’Heeron founded our company and has served as our Chief Executive Officer, and the Chairperson and member of our board of directors since our inception in April 2021. Mr. O’Heeron is also the founder of FibroGenesis, our affiliate, and has served as the Chief Executive Officer of FibroGenesis since January 2006. Mr. O’Heeron is a preeminent biopharma inventor, with over 300 patents issued and pending in the areas of biologics, cell therapy and medical devices. Mr. O’Heeron is a seasoned leader in his field, with over 25 years of experience in medical technology and biotech development. As Chief Executive Officer, he aims to position us to become a global leader in fibroblast-based cell therapies with the development and commercialization of therapies that can cure and treat patients suffering from chronic diseases. Mr. O’Heeron brings together multi-disciplinary teams and resources necessary to commercialize unique technologies. Prior to founding our company and FibroGenesis, he founded an operational investment group, Advanced Medical Technologies, LLC, that identified early-stage opportunities in the medical field with strong intellectual property potential in 2006. He also founded in 1998 NeoSurg Technologies, which developed the T2000 Minimally Invasive Access System. NeoSurg Technologies was sold to Cooper Surgical in 2006. Mr. O’Heeron also previously served in a variety of executive-level positions at Christus Health Care Corporation from 1988 until 1995 and has provided strategic advisory services to healthcare companies in the areas of biologics, advanced surgical instrumentation and telemedicine. Mr. O’Heeron received his Bachelor’s Degree in Healthcare Administration from Texas State University, his Masters in Healthcare Administration from the University of Houston Clear Lake, and his Executive Management Certification in Mergers and Acquisition from the University of Chicago. We believe Mr. O’Heeron is qualified to serve as a member of our board of directors based on our review of his experience, qualifications, attributes and skills, including co-founding our company and his executive leadership experience in the biotechnology industry.

Mark Andersen, CPA CFA. Mark Andersen has served as our Chief Financial Officer since June 2022. Prior to joining us, Mr. Andersen most recently served as Chief Financial Officer and Vice President of Administration for the Indiana Biosciences Research Institute in Indianapolis, Indiana, from May 2016 until May 2022. In that role, he was responsible for finance, human resources, legal, and information technology for the institute. Mr. Andersen helped create the operating infrastructure for the institute, assisted with fundraising and provided oversight for the endowment investment portfolio, which grew to nearly \$150.0 million. Prior to that, from August 2015 until February 2016, Mr. Andersen served as Vice President Finance and Corporate Controller for MiMedx with responsibility for SEC reporting and finance functions. Previously, from January 2004 to August 2015, Mr. Andersen held multiple financial leadership roles at Eli Lilly and Company, including Investments Director for the company’s pension plan, Finance Director for Mergers and Acquisitions, and Controller for Lilly USA. Mr. Andersen received his Bachelor of Science degree in accounting and Master of Science in accountancy from Southern Utah University, and his MBA from the University of Michigan Ross School of Business.

Hamid Khoja, Ph.D. Hamid Khoja has served as our Chief Scientific Officer since August 2021. Dr. Khoja has more than 25 years of experience as a leader of scientific teams, development of cell-based genomic, proteomic, epigenetics assays, and tools, protocols and technologies for use in drug discovery and development and clinical diagnostics. Prior to joining us, Dr. Khoja most recently served from March 2009 to August 2021 as the Principal Scientist at Covaris, LLC, a privately-held scientific tools company with emphasis in genomics, epigenetics, and proteomics, where he provided long-term strategic applications proposals to the Chief Executive Officer, managed external collaborations for product and applications development, assessed new technologies for acquisition and OEM opportunities, and presented posters and presentations at numerous scientific conferences. Dr. Khoja led the effort in successfully incorporating Covaris technology into the Illumina Next Generation Sequencing technology protocols leading to over 15,000 citations. Dr. Khoja also developed the Covaris chromatin immunoprecipitation methodology with over 3,000 citations in peer-reviewed publications, as well as leading the effort in using Covaris technology for simplifying epigenetics assay workflows for use in drug development and discovery, and clinical use. Dr. Khoja also led collaborations with the U.S. National Cancer Institute for successful development of microbiome DNA extraction using acoustics, and completion of FDA EUA SARA-CoC-2 bridge study design for approval of new sample collection and viral ribonucleic acid (RNA) extraction using Covaris technology. Dr. Khoja also developed a patented workflow for the manufacturing of synthetic cell-free DNA for use as reference standard in sequencing based liquid biopsy clinical oncology-based assays. Prior to Covaris, Dr. Khoja was a Senior Applications Scientist at Genomic Solutions, a startup scientific tools company later acquired by Harvard Apparatus, from March 2022 to March 2009, where he led the development of a high throughput protein crystallization platform used in pharmaceutical industry for drug development, managed the scientific applications group, presented company resources at scientific meetings and assessed new technologies for acquisition and OEM opportunities. During the startup phase of Sequenom, Inc., from January 2000 to March 2003, Dr. Khoja established the methodology for highly multiplexed polymerase chain reaction, or PCR, used in the development of Sequenom's massEXTEND technology for MALDI-TOF MS-based analysis of single nucleotide polymorphisms and genetic disease. Dr. Khoja led the effort in developing diagnostic MS-based assays for hemochromatosis, cystic fibrosis and ten predominantly Jewish genetic diseases using Sequenom's massEXTEND technology which were then transferred to a large clinical diagnostic company. Dr. Khoja also previously worked at Eli Lilly and Company from November 1998 to September 1999 and Chiron Corporation from October 1995 to October 1998. During his career at Eli Lilly, Dr. Khoja established a high throughput PCR and sequencing strategy using a variety of sequencing strategies and bioinformatic tools available in 1999 for obtaining high coverage genome sequencing which led to the finalizing of the first ever complete sequence of the *S. pneumoniae* genome. At Chiron Corporation, which was subsequently acquired by Novartis, Dr. Khoja helped in the design, development and optimization of HTP binding assays for FGFR, VEGF, PDGF, and EPO receptors, identification of novel G-protein coupled seven transmembrane receptors, and identification of novel proteins involved in the TNF signaling pathway, and development of branched-DNA based HTP screening for ligand-induced oncogene quantification.

Dr. Khoja received his Bachelor of Science in Molecular Biology from the University of Southern California and his Ph.D. in Molecular Biology from Boston University.

Ruben Garcia. Ruben Garcia has served as our General Counsel since March 1, 2024. Prior to FibroBiologics, Mr. Garcia most recently served as Senior Vice President, General Counsel and Corporate Secretary at AcelRx Pharmaceuticals, Inc. (n/k/a Talphera, Inc.), a pharmaceutical company, from April 2019 to February 2022. In that role, he was responsible for all legal and compliance matters. Prior to AcelRx, Mr. Garcia was Senior Corporate Counsel and Assistant Secretary at Ultragenyx Pharmaceutical Inc., a biopharmaceutical company, from November 2016 to April 2019, with responsibility for SEC and governance matters. Prior to Ultragenyx, Mr. Garcia was an attorney at Vinson & Elkins LLP and Jones Day, where he practiced in the areas of capital markets, securities offerings, corporate governance and mergers and acquisitions. Mr. Garcia holds a B.A. in Government and Economics from Georgetown University and a J.D. from Stanford Law School.

Non-Employee Directors

The following table sets forth certain information, as of the date of this prospectus, concerning our non-employees who serve on our board of directors:

Name	Age	Position
Robert Hoffman	58	Director
Victoria Niklas, M.D.	65	Director
Richard Cilento, Jr., MBA	62	Director
Stacy Coen, MBA	53	Director
Matthew Link	49	Director

The following is a biographical summary of the experience of our non-employee directors.

Robert Hoffman. Robert Hoffman has served on our board of directors since April 2021. Mr. Hoffman currently serves as President, Chief Executive Officer and Chairperson of the board of directors of Kintara Therapeutics, Inc. (Nasdaq: KTRA), a clinical stage, biopharmaceutical company focused on the development and commercialization of new cancer therapies, a member of the board of directors of ASLAN Pharmaceuticals Limited (Nasdaq: ASLN), an oncology-focused biotechnology company developing a portfolio of immuno-oncology agents and targeted therapies, and Chairperson, and a member, of the board of directors of Antibe Therapeutics Inc., a Toronto, Canada-based pharmaceutical company listed on the Toronto Stock Exchange. Mr. Hoffman previously served as Senior Vice President and Chief Financial Officer of Heron Therapeutics, Inc., (Nasdaq: HRTX), a commercial-stage biotechnology company, from April 2017 to October 2020, and as Chief Financial Officer of AnaptysBio, Inc. (Nasdaq: ANAB), a specialty pharmaceutical company, from July 2015 to September 2016. From June 2012 to July 2015, Mr. Hoffman served as the Senior Vice President, Finance and Chief Financial Officer of Arena Pharmaceuticals, Inc., or Arena, a biopharmaceutical company, prior to its acquisition by Pfizer Inc. in March 2022. From August 2011 to June 2012 and previously from December 2005 to March 2011, Mr. Hoffman served as Arena's Vice President, Finance and Chief Financial Officer and in a number of various roles of increasing responsibility from 1997 to December 2005. Mr. Hoffman formerly served as a member of the board of directors of Saniona AB, a biopharmaceutical company, from September 2021 to May 2022, and as a member of the board of directors of Kura Oncology, Inc. (Nasdaq: KURA), a cancer research company, from March 2015 to August 2021. He also previously served as a member of the board of directors of CombiMatrix Corporation, a molecular diagnostics company, MabVax Therapeutics Holdings, Inc., a biopharmaceutical company, and Aravive, Inc. (Nasdaq: ARAV), a clinical stage biotechnology company. Mr. Hoffman serves as a member of the steering committee of the Association of Bioscience Financial Officers. Mr. Hoffman formerly served as a director and President of the San Diego Chapter of Financial Executives International and was an advisor to the Financial Accounting Standard Board, or FASB, from 2010 to 2020, advising the U.S. accounting rulemaking organization on emerging issues and new financial guidance. Mr. Hoffman holds a B.B.A. from St. Bonaventure University. We believe Mr. Hoffman's financial and executive business experience qualifies him to serve on our board of directors.

Victoria Niklas, M.D. Victoria Niklas has served on our board of directors since April 2021. Dr. Niklas has a distinguished career spanning more than two decades in translational research, clinical care and teaching at academic health centers, and is currently the Chief Medical Officer of Oak Hill Bio, a clinical-stage neonatology and rare disease therapeutics company, a position she has held since 2022. Prior to joining Oak Hill Bio, Dr. Niklas served in Global Medical Affairs and as Global Program Leader of the OHB-607 program in Rare Disease and Hematology at Takeda Pharmaceuticals. Before Takeda, she was Chief Medical and Scientific Officer at Prolacta Bioscience, a neonatal nutritional product development company based on human donor milk. Dr. Niklas has over 20 years of experience as an academic neonatologist with expertise in developmental and acquired inflammatory disorders of the gut, the lung and the mucosal immune system with relevance to diseases across the lifespan. She has held positions as Chief, Division of Newborn Medicine at Nemours Children’s Hospital, Chief of Neonatology at UCLA Olive View Medical Center, and Visiting Professor of Clinical Pediatrics at the David Geffen School of Medicine at UCLA. Dr. Niklas is board certified in Perinatal and Neonatal Medicine and holds a California medical license. In addition to being a co-author on numerous scientific and clinical publications, she has helped lead the development of patented products and has served as a board member for multiple biotech and early-stage companies in functional foods. Dr. Niklas received her MD from Harvard Medical School, her MA in Biochemistry and Molecular Biology from Harvard University, and her bachelor’s in Biological Sciences from Goucher College. We believe Dr. Niklas’ extensive experience and knowledge in the biotechnology sector qualifies her to serve on our board of directors.

Richard Cilento, Jr., MBA. Richard Cilento has served on our board of directors since April 2021. Mr. Cilento is the founder, Chairperson of the board of directors and Chief Executive Officer of GlycosBio Inc., a life sciences research and development company. Mr. Cilento was the founder, President and Chief Executive Officer of FuelQuest, Inc., a provider of information technology, supply chain management and tax automation technologies, which was acquired by Saracen Energy Advisors LP in May 2007. Mr. Cilento has held senior-management positions with several technology firms, including Xerox Corporation, where he served as Vice President of Strategic Services of Xerox Connect. Prior to that, he was the Vice President of Corporate Services for XLConnect Solutions, where he served as the lead technologist for advanced systems and supported the organization through its initial public offering and its eventual merger with Xerox. An aeronautical and astronomical engineer, Mr. Cilento began his career at the U.S. National Aeronautics and Space Administration (NASA), where he and his team built space shuttle flight plans for the U.S. Department of Defense Star Wars program and a diverse set of government-funded technology and life science experimentation. Mr. Cilento was a lead engineer who designed and planned the space station assembly sequences for the construction of the International Space Station. Mr. Cilento holds a BS degree in Aeronautical and Astronomical Engineering from the University of Illinois and an MBA at the University of Houston, Clear Lake. We believe Mr. Cilento’s business experience across a broad set of technical industries and executive-level knowledge of capital markets, including venture capital, private equity and public markets, qualifies him to serve on our board of directors.

Stacy Coen, MBA. Stacy Coen has served as a member of our board of directors since July 2021. Ms. Coen has over 25 years of business and corporate development experience from leading oncology and rare disease companies. She most recently served as the Chief Business Officer for ImmunoGen, Inc., a company that is developing the next generation of antibody-drug conjugates to improve outcomes for cancer patients. Prior to ImmunoGen, Ms. Coen worked at Editas Medicine, Inc., a biotechnology company developing therapies for rare diseases, where she served as Vice President, Business Development and was responsible for business development, strategy, transactions and alliance management. Prior to joining Editas, Ms. Coen served in multiple roles of increasing responsibility at Genzyme Corporation (now known as Sanofi Genzyme), including as Vice President, Head of Rare Disease Business Development and Licensing, and as Vice President, Global Head of Strategy and Business Development, Multiple Sclerosis, among others. Ms. Coen currently serves on the Huntington’s Disease Society of America’s Center Programs & Education Advisory Committee. Ms. Coen received a BS in Finance and Economics from the University of Massachusetts and an MBA from the Darden Graduate School of Business at the University of Virginia. We believe Ms. Coen’s extensive executive-level experience in the biotechnology industry qualifies her to serve on our board of directors.

Matthew Link. Matthew Link has served on our board of directors since April 2021. Mr. Link has more than 20 years of experience in the healthcare and medical technology industries and currently serves as Chief Commercial Officer for Sight Sciences (SGHT). From 2021 to 2023 he served as managing partner at Orion Healthcare Advisors, LLC, a consulting services provider. From 2006 to 2021 Mr. Link served in regional and executive leadership positions at NuVasive Inc., a global leader in surgical implants and enabling technology for spine surgery and orthopedics. As President of NuVasive, Inc., his responsibilities included oversight of global business units in spine, neurophysiology, and orthopedics. Prior to NuVasive, Inc., Mr. Link held commercial leadership roles at Depuy Orthopedics and Depuy Spine. He also currently serves as chairman of the board of directors at Galen Robotics and as a member of the board of directors of Springbok Analytics and DinamicOR, and the Coulter Translational Research Endowment at the University of Virginia. Mr. Link received a BSEd in Physical Education and Sports Medicine from the University of Virginia. We believe Mr. Link's extensive medical technology industry and executive experience qualifies him to serve on our board of directors.

Family Relationships

There are no family relationships among any of our directors or executive officers.

Scientific Advisory Board

We have a scientific advisory board, comprised of the following world-renowned scientists with relevant expertise, which helps guide our research and development efforts.

- Claudia Lucchinetti, M.D., Ph.D.
- S. Thomas Carmichael, M.D., Ph.D.
- Kate Rubins, Ph.D.
- Elizabeth Shpall, M.D.
- Neil Bhowmick, Ph.D.

Board of Directors

Our board of directors currently consists of six directors. Our amended and restated certificate of incorporation provides that, subject to the rights of holders of any series of our preferred stock to elect directors, the number of directors on our board of directors shall be fixed from time to time solely by resolution of the majority of the total number of authorized directors, whether or not there exist any vacancies in previously authorized directorships.

Pursuant to our amended and restated certificate of incorporation, subject to the preferential rights of holders of any series of our preferred stock, any newly created directorship that results from an increase in the number of directors or any vacancy on our board of directors can only be filled by the affirmative vote of a majority of the total number of directors then in office, even if less than a quorum, or by a sole remaining director and cannot be filled by the stockholders. Further, any member of our board of directors or our entire board of directors may only be removed for cause, and then only by the affirmative vote of the holders of at least 66^{2/3}% in voting power of our stock.

When considering whether directors have the experience, qualifications, attributes or skills, taken as a whole, to enable our board of directors to satisfy its oversight responsibilities effectively in light of our business and structure, the board of directors focuses primarily on each person's background and experience as reflected in the information discussed in each of the directors' individual biographies set forth above. We believe that our directors provide an appropriate mix of experience and skills relevant to the size and nature of our business.

Director Independence

Our board of directors has determined that all members of our board of directors, except Pete O’Heeron, are independent directors for purposes of the rules of Nasdaq and the SEC. In making this determination, our board of directors considered the relationships that each non-employee director has with us and all other facts and circumstances that our board of directors deemed relevant, including the beneficial ownership of our common stock by each non-employee director.

The composition and functioning of our board of directors and each of our committees complies with all applicable requirements of Nasdaq and the rules and regulations of the SEC.

Staggered Board

In accordance with the terms of our amended and restated certificate of incorporation, our board of directors is divided into three staggered classes of directors and each is assigned to one of the three classes. At each annual meeting of our stockholders, a class of directors will be elected for a three-year term to succeed the directors of the same class whose terms are then expiring. The terms of the directors will expire upon the election and qualification of successor directors at the annual meeting of shareholders to be held during the years 2024 for Class I directors, 2025 for Class II directors and 2026 for Class III directors and will be subject to their earlier death, disqualification, resignation or removal.

- Our Class I directors are Robert Hoffman and Richard Cilento, Jr.;
- Our Class II directors are Mathew Link and Victoria Niklas; and
- Our Class III directors are Stacy Coen and Pete O’Heeron.

The division of our board of directors into three classes with staggered three-year terms may delay or prevent stockholder efforts to effect a change of our management or a change in our control.

Board Leadership Structure

Our board of directors is currently chaired by our founder, Pete O’Heeron. Our board of directors can modify our leadership structure in the future as it deems appropriate.

Committees of our Board of Directors

Our board of directors has established an audit committee, a compensation committee and a governance and nominating committee, each of which operates pursuant to a charter adopted by our board of directors. Our board of directors may also establish other committees from time to time to assist the board of directors. The composition and functioning of all of our committees complies with all applicable requirements of the Sarbanes-Oxley Act, Nasdaq and SEC rules and regulations. Each committee’s charter is available on our website at www.fibrobiologics.com.

Audit Committee

The members of our audit committee are Mr. Hoffman, Dr. Niklas, and Mr. Cilento. Mr. Hoffman serves as the chairperson of the committee. Our board of directors has determined that each member of the audit committee is “independent” as that term is defined in Nasdaq rules and has sufficient knowledge in financial and auditing matters to serve on the audit committee. In addition, our board of directors has determined that each member of the audit committee meets the heightened independence requirements for audit committees required under Section 10A of the Exchange Act and related SEC and Nasdaq rules. Our board of directors has determined that Mr. Hoffman is an “audit committee financial expert,” as defined under the applicable rules of the SEC. The audit committee’s responsibilities include:

- appointing, approving the compensation of and assessing the independence of our independent registered public accounting firm;
- pre-approving auditing and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing the overall audit plan with our independent registered public accounting firm and members of management responsible for preparing our financial statements;
- reviewing and discussing with management and our independent registered public accounting firm our annual and quarterly financial statements and related disclosures as well as critical accounting policies and practices used by us;
- coordinating the oversight and reviewing the adequacy of our internal control over financial reporting;
- establishing policies and procedures for the receipt and retention of accounting-related complaints and concerns;
- recommending based upon the audit committee’s review and discussions with management and our independent registered public accounting firm whether our audited financial statements shall be included in our annual report on Form 10-K;
- monitoring the integrity of our financial statements and our compliance with legal and regulatory requirements as they relate to our financial statements and accounting matters;
- preparing the audit committee report required by SEC rules to be included in our annual proxy statement;
- reviewing all related person transactions for potential conflict of interest situations and approving, or recommending to the board of directors for approval, all such transactions; and
- reviewing quarterly earnings releases.

Compensation Committee

The members of our compensation committee are Mr. Hoffman, Ms. Coen and Mr. Link. Mr. Hoffman serves as the chairperson of the committee. Our board of directors has determined that each member of the compensation committee is “independent” as that term is defined in Nasdaq rules and is a “non-employee director” under Rule 16b-3 under the Exchange Act. In addition, our board of directors has determined that each member of the compensation committee meets the heightened independence requirements for compensation committee purposes under Section 10C of the Exchange Act and related SEC and Nasdaq rules. The compensation committee’s responsibilities include:

- reviewing and approving our philosophy, policies and plans with respect to the compensation of our chief executive officer;
- making recommendations to our board of directors with respect to the compensation of our chief executive officer and making recommendations to our board of directors with respect to the compensation of our other executive officers or approving such compensation of our other executive officers;
- reviewing and assessing the independence of compensation advisors;
- overseeing and administering our equity incentive plans;
- reviewing and making recommendations to our board of directors with respect to director compensation; and
- preparing the compensation committee reports required by the SEC, including our “compensation discussion and analysis” disclosure.

Governance and Nominating Committee

The members of our governance and nominating committee are Ms. Coen, Dr. Niklas and Mr. Link. Ms. Coen serves as the chairperson of the committee. Our board of directors has determined that each member of the governance and nominating committee is “independent” as defined in Nasdaq rules. The governance and nominating committee’s responsibilities include:

- developing and recommending to the board of directors criteria for board and committee membership;
- establishing procedures for identifying and evaluating board of director candidates, including nominees recommended by shareholders;
- reviewing the composition of the board of directors to ensure that it is composed of members containing the appropriate skills and expertise to advise us;
- identifying and screening individuals qualified to become members of the board of directors;
- recommending to the board of directors the persons to be nominated for election as directors and to each of the board’s committees;
- developing and recommending to the board of directors a corporate governance framework and related governance documents; and
- overseeing the evaluation of our board of directors and management.

Code of Conduct

We have adopted a written code of ethics and business conduct that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A current copy of the code is posted on our website at www.fibrobiologics.com. If we make any substantive amendments to, or grant any waivers from, the code of ethics and business conduct for any officer or director, we will disclose the nature of such amendment or waiver on our website or in a current report on Form 8-K.

EXECUTIVE AND DIRECTOR COMPENSATION

Executive Compensation

This section discusses the material components of the executive compensation program for our executive officers who are named in the “—2023 Summary Compensation Table” below. For the fiscal year ended December 31, 2023, our “named executive officers” and their positions were as follows:

- Pete O’Heeron, Chairperson and Chief Executive Officer;
- Hamid Khoja, Ph.D., Chief Scientific Officer; and
- Mark Andersen, Chief Financial Officer.

This discussion may contain forward-looking statements that are based on our current plans, considerations, expectations and determinations regarding future compensation programs. Actual compensation programs that we adopt following the completion of this offering may differ materially from the currently planned programs summarized in this discussion. As an “emerging growth company” and a “smaller reporting company,” each as defined under SEC rules, we are not required to include a compensation discussion and analysis section and have elected to comply with the scaled disclosure requirements applicable to emerging growth companies and/or smaller reporting companies.

2023 Summary Compensation Table

The following table represents information regarding the total compensation awarded to, earned by or paid to our named executive officers during the fiscal years ended December 31, 2022 and 2023:

Name and Principal Position	Year	Salary (\$)	Bonus (\$) (2)	Option Awards (\$) (3)	All Other Compensation (\$) ⁽⁴⁾	Total (\$)
Pete O’Heeron	2022	600,000	—	—	22,485	622,485
<i>Chairperson and Chief Executive Officer</i>	2023	600,000	300,000	3,335,400	50,723	3,452,273
Hamid Khoja, Ph.D.	2022	300,208	101,500	23,900	20,505	446,113
<i>Chief Scientific Officer</i>	2023	325,000	47,396	818,100	50,723	1,241,219
Mark Andersen ⁽¹⁾	2022	189,583	15,000	20,100	88,401	313,084
<i>Chief Financial Officer</i>	2023	325,000	66,354	820,350	70,523	1,282,227

(1) Mark Andersen joined us in June 2022.

(2) Bonus amounts reflect actual bonus payments made during the calendar year.

(3) In accordance with SEC rules, amounts in this column reflect the aggregate grant date fair value of stock options granted computed in accordance with ASC 718, rather than the amounts paid or realized by the named individual. We provide information regarding the assumptions used to calculate the value of the stock options granted in Note 12 to our audited financial statements included elsewhere in this prospectus.

(4) Amounts in the “All Other Compensation” column consist of the amounts set forth in the table below:

Named Executive Officer (2022)	401(k) Plan Matching Contributions (\$)	Healthcare Benefits (\$)	Relocation (\$)
Pete O’Heeron	—	22,485	—
Hamid Khoja, Ph.D.	—	20,505	—
Mark Andersen	6,500	20,512	61,389

Named Executive Officer (2023)	401(k) Plan Matching Contributions (\$)	Healthcare Benefits (\$)	Relocation (\$)
Pete O’Heeron	—	50,723	—
Hamid Khoja, Ph.D.	—	50,723	—
Mark Andersen	19,800	50,723	—

2022 Salaries

In 2022, our named executive officers received an annual base salary to compensate them for services rendered to us. The base salary payable to each named executive officer is intended to provide a fixed component of compensation reflecting the executive’s skill set, experience, role, and responsibilities.

For fiscal year 2022, Mr. O’Heeron’s annual base salary was \$600,000 and Mr. Andersen’s annual base salary was \$325,000. Dr. Khoja’s annual base salary was increased from \$290,000 to \$325,000 during fiscal year 2022.

2023 Salaries

In 2023, our named executive officers received an annual base salary to compensate them for services rendered to us. The base salary payable to each named executive officer is intended to provide a fixed component of compensation reflecting the executive’s skill set, experience, role, and responsibilities.

For fiscal year 2023, Mr. O’Heeron’s annual base salary was \$600,000, Mr. Andersen’s annual base salary was \$325,000, and Dr. Khoja’s annual base salary was \$325,000.

2022 Bonuses

In fiscal year 2022, each named executive officer was eligible to earn his bonus based on the attainment of pre-established annual company and individual performance objectives, as determined by our board of directors in their discretion. Mr. O’Heeron was eligible to receive an annual cash bonus targeted at 50% of his base salary, and was paid a \$300,000 bonus in 2023 based on 2022 performance. Dr. Khoja was eligible to earn an annual cash bonus targeted at 35% of base salary and was paid a bonus of \$101,500 in 2022 after his first anniversary in 2022, and was paid a \$47,396 bonus in 2023 based upon 2022 performance pro rata from the date of his first anniversary with us. Future bonuses will be based upon calendar years. Mr. Andersen was eligible to earn an annual cash bonus targeted at 35% of base salary, and was paid a \$66,354 bonus in 2023 based on 2022 performance and prorated for 2022 based upon the beginning of his employment with us in June 2022.

2023 Bonuses

For fiscal year 2023, each named executive officer is eligible to earn his bonus based on the attainment of pre-established annual company and individual performance objectives, as determined by our board of directors in their discretion. Mr. O’Heeron is eligible to receive an annual cash bonus targeted at 50% of his base salary, or \$300,000, Dr. Khoja is eligible to earn an annual cash bonus targeted at 35% of base salary, or \$113,750, and Mr. Andersen is eligible to earn an annual cash bonus targeted at 35% of base salary, or \$113,750.

Annual bonuses are determined based upon both company performance and individual contributions for the fiscal year and are generally determined and awarded in January of the subsequent year.

Equity Compensation

Dr. Khoja and Mr. Andersen each received commitments in their employment agreements for the equivalent of 7,500 stock options. These options were granted in 2022 after the 2022 Stock Plan (as defined herein) was approved and authorized. Dr. Khoja was also awarded the equivalent of 1,250 shares of non-voting common stock in 2022 prior to establishment of the 2022 Stock Plan. The stock options granted to named executives in 2022 vest 1/3 on the first anniversary date of employment and 1/36th each month thereafter until fully vested, subject to continued service, and will accelerate in full upon the occurrence of a “change in control” of the Company (as defined in the 2022 Stock Plan).

In 2023, Mr. O’Heeron, Dr. Khoja, and Mr. Andersen each received a grant of stock options under the 2022 Stock Plan. Mr. O’Heeron was awarded the equivalent of 1,853,000 shares, Dr. Khoja was awarded the equivalent of 454,500 shares, and Mr. Andersen was awarded the equivalent of 455,750 shares. The stock options granted in 2023 vest 1/4th on the first anniversary of the vesting start date, which was January 1, 2023, with the remainder to vest monthly over 36 months.

For additional information about the 2022 Stock Plan, please see the section titled “—Equity Compensation Plans” below.

Other Elements of Compensation

Retirement Plans

We participate in the Insuperity 401(k) retirement savings plan, sponsored by Insuperity Holdings, Inc., or the Insuperity 401(k) plan, for our employees, including our named executive officers, who satisfy certain eligibility requirements. Our named executive officers are eligible to participate in the Insuperity 401(k) plan on the same terms as other full-time employees. In 2022 and 2023, contributions made by participants in the 401(k) plan were matched up to a specified percentage of the employee contributions on behalf of the named executive officers. These matching contributions are fully vested as of the date on which the contribution is made. Our named executive officers continue to participate in this Insuperity 401(k) plan on the same terms as other full-time employees.

Employee Benefits and Perquisites

Health/Welfare Plans. All of our full-time employees, including our named executive officers, are eligible to participate in Insuperity’s health and welfare plans, including:

- medical, dental and vision benefits;
- medical and dependent care flexible spending accounts;
- short-term and long-term disability insurance; and
- life insurance.

We believe that the employee benefits described above are necessary and appropriate to provide a competitive compensation package to our named executive officers.

Employment Agreements with our Executive Officers

Pete O’Heeron Employment Agreement

On December 1, 2023, we entered into an employment agreement with Mr. Pete O’Heeron, pursuant to which Mr. O’Heeron agreed to serve as our President and Chief Executive Officer. Mr. O’Heeron’s employment pursuant to the agreement is “at-will” and is terminable by either party for any reason and with or without notice.

Pursuant to the employment agreement, Mr. O’Heeron is entitled to receive an initial base salary of \$600,000, which is to be reviewed annually by the Board of Directors or Compensation Committee but may not be reduced without Mr. O’Heeron’s consent. In addition, the agreement provides that Mr. O’Heeron is eligible to receive an annual performance bonus, as reasonably determined by the Board of Directors or, to the extent delegated by the board, the Compensation Committee, based on one or more performance targets annually determined by the board or the committee, provided that to the extent all performance targets are met, the bonus is required to equal not less than 50% of his base salary. The percentage bonus target is to be reviewed periodically by the board or Compensation Committee.

The agreement also provides that Mr. O’Heeron is eligible to participate in the health and welfare benefit plans and programs maintained by us for the benefit of our employees.

Pursuant to the agreement, if Mr. O’Heeron’s employment is terminated by the Company without cause (as defined in the agreement) or by Mr. O’Heeron for good reason (as defined in the agreement), then he will be eligible to receive severance in an amount equal to twelve months’ base salary, paid as if he was still employed during such 12 month period, and the amount of the target bonus that would have been due during such 12 month period (payable 60 days after notice of termination). Additionally, Mr. O’Heeron shall continue to vest options during such 12 month period. If the agreement is terminated for any reason, Mr. O’Heeron is due all compensation earned through the date of termination, including unused and accrued vacation, any unpaid bonus which he is due, and a prorated portion of the bonus which would have accrued for the year of termination (with such bonus amounts being paid at the same time as bonuses are paid to other Company executives).

In the event an involuntary termination of Mr. O’Heeron’s employment occurs during the 12 months following a change in control (as defined in the agreement), or within two months prior to a change in control, or in the event Mr. O’Heeron terminates his employment for any reason not sooner than six months after the occurrence of a change in control, and subject to Mr. O’Heeron entering into a release with the Company, all stock options and stock-based awards held by Mr. O’Heeron, as of the date of notice of such termination are to vest and become exercisable or nonforfeitable.

The agreement contains customary assignment of inventions and confidentiality obligations of Mr. O’Heeron, and a 12 months non-compete/non-solicitation prohibition, following the termination of his employment.

The compensation under the employment agreement (including bonus target) may be increased from time to time, by the Compensation Committee, or the Board of Directors (with the recommendation of the Compensation Committee), which increases do not require the entry into an amended employment agreement.

The Compensation Committee, or the board, with the recommendation of the Compensation Committee, may also pay or grant discretionary cash bonuses or equity bonuses from time to time in their discretion, at any time, in its/their discretion. The equity bonus may be in the form of common stock, stock options or other equity consideration, in such amounts and with such terms as may be determined by the Compensation Committee or the board, with the recommendation of the Compensation Committee, from time to time.

Hamid Khoja, Ph.D. Employment Agreement

We have entered into an employment agreement with Dr. Khoja, dated July 20, 2021, pursuant to which Dr. Khoja serves as our Chief Scientific Officer. Dr. Khoja’s employment pursuant to the agreement is “at-will” and is terminable by either party for any reason and with or without notice.

Pursuant to his agreement, Dr. Khoja is entitled to receive an initial base salary of \$290,000, which was increased to \$325,000 in 2022. In addition, the agreement provides that Dr. Khoja is eligible to receive an annual performance bonus of up to 35% of his base salary, to be paid based on the achievement of company and individual performance goals. In connection with his entry into the offer letter, Dr. Khoja was granted a stock option award for the equivalent of 7,500 shares of common stock, which vests as to 1/3 of the shares underlying the stock option on the first anniversary of employment date and 1/36th per month thereafter until fully vested, subject to continued employment through the applicable vesting date. Pursuant to the agreement, Dr. Khoja was also paid a one-time cash bonus equal to \$15,000 in connection with his commencement of employment and was entitled to payment of up to \$45,000 of relocation expenses. The agreement also provides that Dr. Khoja is eligible to participate in the health and welfare benefit plans and programs maintained by us for the benefit of our employees.

Pursuant to the agreement, if Dr. Khoja’s employment is terminated by the Company without cause, then he will be eligible to receive severance in an amount equal to nine months’ base salary.

Mark Andersen Employment Agreement

We have entered into an employment agreement with Mr. Andersen, dated May 20, 2022, pursuant to which Mr. Andersen serves as our Chief Financial Officer. Mr. Andersen’s employment pursuant to the agreement is “at-will” and is terminable by either party for any reason with or without notice.

Pursuant to his agreement, Mr. Andersen is entitled to receive an initial base salary of \$325,000. In addition, the agreement provides that Mr. Andersen is eligible to receive an annual performance bonus of up to 35% of his base salary, to be paid based on the achievement of company and individual performance goals. In connection with his entry into the agreement, Mr. Andersen was granted a stock option award for the equivalent of 7,500 shares of common stock, which vests as to 1/3 of the shares underlying the stock option on the first anniversary of employment date and 1/36th per month thereafter, subject to continued employment through the applicable vesting date. Pursuant to the agreement, Mr. Andersen was also paid a one-time cash bonus equal to \$15,000 in connection with his commencement of employment and was entitled to payment of up to \$45,000 of relocation expenses. The agreement also provides that Mr. Andersen is eligible to participate in the health and welfare benefit plans and programs maintained by us for the benefit of our employees.

Pursuant to the agreement, if Mr. Andersen’s employment is terminated by the Company without cause, then he will be eligible to receive severance in an amount equal to nine months’ base salary.

Ruben Garcia Employment Agreement

We have entered into an employment agreement with Mr. Garcia, dated February 29, 2024, pursuant to which Mr. Garcia serves as our General Counsel. Mr. Garcia’s employment pursuant to the agreement is “at-will” and is terminable by either party for any reason with or without notice.

Pursuant to his agreement, Mr. Garcia is entitled to receive an initial base salary of \$325,000. In addition, the agreement provides that Mr. Garcia is eligible to receive an annual performance bonus of up to 35% of his base salary, to be paid based on the achievement of company and individual performance goals. In connection with his entry into the

agreement, Mr. Garcia was granted a stock option award for the equivalent of 180,000 shares of common stock, which vests as to 1/4 of the shares underlying the stock option on the first anniversary of employment date and 1/48th per month thereafter, subject to continued employment through the applicable vesting date. Pursuant to the agreement, Mr. Garcia was also paid a one-time cash bonus equal to \$15,000 in connection with his commencement of employment and was entitled to payment of up to \$30,000 of relocation expenses. The agreement also provides that Mr. Garcia is eligible to participate in the health and welfare benefit plans and programs maintained by us for the benefit of our employees.

Pursuant to the agreement, if Mr. Garcia's employment is terminated by the Company without cause, then he will be eligible to receive severance in an amount equal to nine months' base salary.

Equity Compensation Plans

The following summarizes the material terms of the FibroBiologics, Inc. 2022 Stock Plan, or the 2022 Stock Plan.

2022 Stock Plan

Our board of directors adopted on August 10, 2022, and our stockholders approved on August 18, 2022, our 2022 Stock Plan. The 2022 Stock Plan provides for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards, and other stock awards. The 2022 Stock Plan, through the grant of stock awards, is intended to help us secure and retain the services of eligible award recipients, provide incentives for such persons to exert maximum efforts for our success and provide a means by which the eligible recipients may benefit from increases in value of our common stock. Through March 31, 2023, we have issued the equivalent of 101,250 options with a strike price of the equivalent of \$3.28 per share to employees, directors, and scientific advisory board members, and the equivalent of 3,689,750 options with a strike price of the equivalent of \$2.28 per share to employees and directors, and 216,875 options with an exercise price of \$13.00 per share to employees under the 2022 Stock Plan. In August 2023, a total of 2,500 options with a strike price of \$3.28 per share were forfeited. Generally, awards granted by us vest over four years and, prior to public listing, have an exercise price equal to the estimated fair value of our common stock as determined by our board of directors with consideration given to contemporaneous valuations of our common stock prepared by an independent third-party valuation firm. After public listing, the exercise price is equal to the closing bid price per share on the date of grant.

As of December 31, 2023, there were the equivalent of 8,711,500 shares available for future issuance under the 2022 Stock Plan.

Outstanding Equity Awards at December 31, 2023

The following table presents information regarding outstanding equity awards held by our named executive officers as of December 31, 2023. Other than the equivalent of 1,250 shares of non-voting common stock awarded to Dr. Khoja in 2022 prior to establishment of the 2022 Stock Plan, all awards were granted under our 2022 Stock Plan.

Name	Number of securities underlying unexercised options (#) exercisable	Number of securities underlying unexercised options (#) unexercisable	Option exercise price (\$)	Option expiration date
Pete O'Heeron	—	1,853,000	2.28	February 16, 2033
Hamid Khoja, Ph.D.	4,861	2,639	3.28	September 25, 2032
Hamid Khoja, Ph.D.	—	454,500	2.28	February 16, 2033
Mark Andersen	3,472	4,028	3.28	September 25, 2032
Mark Andersen	—	455,750	2.28	February 16, 2033

Director Compensation

Non-employee Director Compensation Table

The following table presents the total compensation for each person who served as a non-employee member of our board of directors during the fiscal year ended December 31, 2022. Other than as set forth in the table and described more fully below, we did not pay any compensation, make any equity awards or non-equity awards to, or pay any other compensation to any of the non-employee members of our board of directors in 2022 for their services as members of our board of directors. Pete O'Heeron, our Chairperson and Chief Executive Officer, received no additional compensation for his service as a director. See the section titled "Executive Compensation" for more information on the compensation paid to or earned by O'Heeron as an employee for the year ended December 31, 2022.

Name	Fees Earned or Paid in Cash (\$)	Stock Awards (\$) (1)	Option Awards (\$) (2)	Total (\$)
Robert Hoffman	50,000	24,600	12,800	87,400
Victoria Niklas	43,000	24,600	12,800	80,400
Richard Cilento, Jr.	43,000	24,600	12,800	80,400
Stacy Coen	41,000	24,600	12,800	78,400
Matthew Link	41,000	24,600	12,800	78,400

- (1) In January 2022, each of our non-employee directors was awarded the equivalent of 7,500 shares of stock.
- (2) In September 2022, each of our non-employee directors was granted the equivalent of 5,000 stock options with an exercise price of the equivalent of \$3.28 per share.
- (3) The amounts reported represent the aggregate grant date fair value of the stock and stock options awarded to the non-employee directors during fiscal year 2022, calculated in accordance with ASC Topic 718. Such grant date fair value does not take into account any estimated forfeitures. The assumptions used in calculating the grant date fair value of the awards reported in this column are set forth in the notes to our financial statements included elsewhere in this prospectus. The amounts reported in this column reflect the accounting cost for the stock and stock options and do not correspond to the actual economic value that may be received upon exercise of the stock options or any sale of any of the underlying shares of common stock.

The following table presents the total compensation for each person who served as a non-employee member of our board of directors during the fiscal year ended December 31, 2023. Other than as set forth in the table and described more fully below, we did not pay any compensation, make any equity awards or non-equity awards to, or pay any other compensation to any of the non-employee members of our board of directors in 2023 for their services as members of our board of directors. Pete O'Heeron, our Chairperson and Chief Executive Officer, received no additional compensation for his service as a director. See the section titled "Executive Compensation" for more information on the compensation paid to or earned by O'Heeron as an employee for the year ended December 31, 2023.

Name	Fees Earned or Paid in Cash (\$)	Stock Awards (\$)	Option Awards (\$) (1)	Total (\$)
Robert Hoffman	55,000	—	333,540	388,540
Victoria Niklas	48,000	—	333,540	381,540
Richard Cilento, Jr.	43,000	—	333,540	376,540
Stacy Coen	51,000	—	333,540	384,540
Matthew Link	46,000	—	333,540	379,540

- (1) In February 2023, each of our non-employee directors was granted the equivalent of 185,300 stock options with an exercise price of the equivalent of \$2.28 per share.
- (2) The amounts reported represent the aggregate grant date fair value of the stock options awarded to the non-employee directors during fiscal year 2023, calculated in accordance with ASC Topic 718. Such grant date fair value does not take into account any estimated forfeitures. The assumptions used in calculating the grant date fair value of the awards reported in this column are set forth in the notes to our financial statements included elsewhere in this prospectus. The amounts reported in this column reflect the accounting cost for the stock options and do not correspond to the actual economic value that may be received upon exercise of the stock options or any sale of any of the underlying shares of common stock.

As of December 31, 2022, the non-employee members of our board of directors held the following aggregate number of unexercised options:

Name	Number of Securities Underlying Unexercised Options
Robert Hoffman	5,000
Victoria Niklas	5,000
Richard Cilento	5,000
Stacy Coen	5,000
Matthew Link	5,000

Except as set forth above, no non-employee member of our board of directors held unexercised options or unvested shares of our common stock as of December 31, 2022.

As of December 31, 2023, the non-employee members of our board of directors held the following aggregate number of unexercised options:

Name	Number of Securities Underlying Unexercised Options
Robert Hoffman	190,300
Victoria Niklas	190,300
Richard Cilento	190,300
Stacy Coen	190,300
Matthew Link	190,300

Except as set forth above, no non-employee member of our board of directors held unexercised options or unvested shares of our common stock as of December 31, 2023.

Non-Employee Director Compensation Policy

Our board of directors has adopted a non-employee director compensation policy. The policy is designed to enable us to attract and retain, on a long-term basis, highly qualified non-employee directors. Under the policy, each director who is not an employee is paid cash compensation as set forth below:

Position	Annual Retainer
Board of Directors:	
Members (other than chair)	\$ 35,000
Audit Committee:	
Members (other than chair)	\$ 8,000
Retainer for chair	\$ 10,000
Compensation Committee:	
Members (other than chair)	\$ 6,000
Retainer for chair	\$ 10,000
Governance and Nominating Committee:	
Members (other than chair)	\$ 5,000
Retainer for chair	\$ 10,000

In addition, the non-employee director compensation policy provides that, upon initial election to our board of directors, each non-employee director will be granted an equity award the equivalent of 7,500 shares of common stock, or the Initial Grant. Furthermore, on the date of each of our annual meeting of stockholders, each non-employee director who continues as a non-employee director following such meeting will be granted an annual equity award of stock options, to purchase the equivalent of 5,000 shares, or the Annual Grant. The Annual Grant will vest in full upon the earlier of (i) the first anniversary of the date of grant or (ii) the date of the next annual meeting; provided, however, that all vesting shall cease if the director resigns from the board of directors or otherwise ceases to serve as a director, unless the board of directors determines that the circumstances warrant continuation of vesting. In addition, all vested options remain exercisable for 12 months if the director resigns from the board of directors or otherwise ceases to serve as a director. Notwithstanding the foregoing, if an outside director was initially elected to the board of directors within 12 months preceding the annual meeting, then such outside director shall receive an Annual Grant that is pro-rated on a monthly basis for time serving as an outside director.

CERTAIN RELATIONSHIPS AND RELATED PERSON TRANSACTIONS

The following is a summary of transactions or series of transactions since inception, or currently proposed transactions or series of transactions, to which we were, or will be, a party, in which the amount involved exceeded, or will exceed, \$120,000, and in which any of our directors, executive officers, or to our knowledge, beneficial owners of 5% or more of our capital stock, or 5% Security Holders, or any member of the immediate family of, or entities affiliated with, any of the foregoing persons, had, or will have, a direct or indirect material interest.

Series A Preferred Stock

In May 2021, as part our formation, we issued the equivalent of 8,750,000 shares of our Series A Preferred Stock to FibroGenesis in exchange for a Patent Assignment Agreement, which assigns certain patents/applications to us, and an Intellectual Property Cross-License Agreement, which provides to us an exclusive license within defined fields of use for patents/applications retained by FibroGenesis and provides to FibroGenesis an exclusive license to the patents/applications assigned to FibroBiologics for all other fields of use.

In connection with the Direct Listing, all of our outstanding Series A Preferred Stock were automatically canceled, without the payment of additional consideration by or to the holder thereof.

Series C Preferred Stock

In January 2024, in conjunction with our Direct Listing, we issued 2,500 shares of Series C Preferred Stock with super voting rights to our CEO for no consideration.

FibroGenesis Loans

In July 2022, we loaned \$300,000 to FibroGenesis at 0% interest and one year maturity date. In October 2022, we loaned an additional \$60,000 to FibroGenesis at 0% interest and one year maturity. The \$60,000 was fully repaid in December 2022 and the \$300,000 was fully repaid in April 2023.

ROFN Agreement

In January 2023, we entered into an Agreement Regarding Right of First Negotiation with FibroGenesis, or the ROFN Agreement. In exchange for FibroGenesis' consent to amend our certificate of incorporation to (i) eliminate upon our underwritten initial public offering or the direct listing of our common stock on a securities exchange (which we collectively refer to as an IPO) or sale of our company, the liquidation preference for the Series A Preferred Stock, (ii) make the Series B Preferred Stock liquidation preference equal to Series A Preferred Stock and (iii) to provide that upon an IPO or sale of our company, the Series A Preferred Stock will be canceled for no consideration, we agreed to pay to FibroGenesis 15% of the gross proceeds from any equity investments in us prior to an IPO or sale of our company. In addition, we received a five-year right of first negotiation if FibroGenesis decides to license externally any of its technology. Through March 31, 2024, we have paid a total of \$2.8 million to FibroGenesis under the ROFN Agreement based upon gross proceeds from equity investments received through January 31, 2024, the date of our direct listing, which was an IPO, and no further payments are due to FibroGenesis pursuant to the ROFN Agreement.

2021 and 2022 Convertible Notes

In December 2021, we issued and sold to investors, some of whom hold more than 5% shares, in a private placement \$1.3 million of our convertible promissory notes, or the 2021 Notes. The 2021 Notes bore interest at an initial interest rate of 6.0% per annum and would have automatically converted into shares of our common stock in the event of a qualified financing. The conversion price of the 2021 Notes was equal to \$200.0 million divided by the total number of equity interests prior to the dilution from the offering. The 2021 Notes were unsecured and subordinated in right of payment to the prior payment in full to all of our commercial finance lenders, insurance companies, lease financing institutions or other lending institutions approved by our board of directors and regularly engaged in the business of lending money. In April 2023, \$1.3 million of these notes were converted into shares of our Series B Preferred Stock and none of the 2021 Notes are outstanding.

In January 2022 and April 2022, we issued and sold to investors, some of whom hold more than 5% of shares, in a private placement \$0.35 million and \$3.95 million, respectively, of our convertible promissory notes, or the 2022 Notes. The 2022 Notes bore interest at an initial interest rate of 6.0% per annum, had a one-year maturity, and could have been converted at the holder's request into shares of our common stock in the event of a qualified financing. The conversion price of the 2022 Notes was the lesser of (i) a 15% discount to the offering price of our common stock in the event of an IPO or (i) the quotient of \$200.0 million divided by total equity interests prior to the dilution from the offering. The 2022 Notes were unsecured and subordinated in right of payment to the prior payment in full to all of our commercial finance lenders, insurance companies, lease financing institutions or other lending institutions approved by our board of directors and regularly engaged in the business of lending money. In February 2023 through June 2023, \$4.3 million of these notes were converted into shares of our Series B Preferred Stock and none of the 2022 Notes are outstanding.

Equity and Compensation Arrangements

We adopted on August 10, 2022, and our stockholders approved on August 18, 2022, our 2022 Stock Plan, or the 2022 Plan. The 2022 Plan provides for the grant of incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards, and other stock awards. We issued in 2022 a total of the equivalent of 101,250 options with an exercise price the equivalent of \$3.28 per share to employees, directors, and scientific advisory board members under the 2022 Plan. In February 2023, we issued an additional equivalent of 3,689,750 options with an exercise price the equivalent of \$2.28 per share to employees and directors. In March 2024, we issued an additional 216,875 options with an exercise price of \$13.00 per share to employees. Generally, awards granted by the Company vest over three years and, prior to public listing, have an exercise price equal to the estimated fair value of the common stock as determined by our board of directors with consideration given to contemporaneous valuations of our common stock prepared by an independent third-party valuation firm. After public listing the exercise price is equal to the closing bid price per share on the date of grant.

PRINCIPAL STOCKHOLDERS

Security Ownership of Certain Beneficial Owners and Management

The following table sets forth as of April 23, 2024:

- certain information regarding the beneficial ownership of our voting securities (being our voting common stock and our Series C Preferred Stock) by (i) each person or group of affiliated persons known by us to be the beneficial owner of more than 5% of our voting securities, (ii) each of our executive officers, (iii) each of our directors and (iv) all of our directors and executive officers as a group. Except as otherwise indicated, all persons listed below have (a) sole voting power and investment power with respect to their common stock, except to the extent that authority is shared by spouses under applicable law, and (b) record and beneficial ownership with respect to their common stock.

In accordance with the rules of the SEC, beneficial ownership includes voting or investment power with respect to securities and includes the common stock issuable pursuant to options and warrants that are exercisable or settled within 60 days of April 23, 2024. Shares of common stock issuable pursuant to options and warrants are deemed outstanding for computing the percentage of the class beneficially owned by the person holding such securities but are not deemed outstanding for computing the percentage of the class beneficially owned by any other person.

In the table below, the percentage of beneficial ownership prior to the effectiveness of the registration statement of which this prospectus forms a part is based on, as applicable: (i) 32,719,125 shares of our common stock outstanding as of April 23, 2024; and (ii) 2,500 shares of our Series C Preferred Stock outstanding as of January 23, 2024, after giving effect to the Reverse Stock Split.

Each share of our Series C Preferred Stock is entitled to 13,000 votes per share. The percentage of total voting power in the table below is based on, after giving effect to the transactions described in clauses (i) and (ii) in the immediately preceding paragraph and the 13,000 votes per share of Series C Preferred Stock, the sum of (a) 32,719,125 votes, being the total number of votes associated with the 32,719,125 shares of our common stock (with each share of common stock having one vote) and (b) 32,500,000 votes, being the total number of votes associated with the 2,500 shares of Series C Preferred Stock (with each share of Series C Preferred Stock having 13,000 votes).

Unless otherwise indicated, the business address of each of the individuals and entities named below is c/o FibroBiologics, Inc., 455 E. Medical Center, Blvd., Suite 300, Houston, Texas 77598.

Name and address of Beneficial Owner	Beneficial Ownership Prior to the Offering					Shares of Common Stock Being Registered Pursuant to this Prospectus
	Common Stock		Series C Preferred Stock		Percentage of Total Voting Power ⁽¹⁾	
	Shares	%	Shares	%		
5% Stockholders:						
Golden Knight Incorporated, L.P. ⁽²⁾	2,125,001	6.0%	—	—	3.3%	—
Executive Officers and Directors						
Pete O'Heeron, MSHA ⁽³⁾	6,704,418	19.0%	2,500	100%	60.1%	—
Mark Andersen, CPA CFA ⁽⁴⁾	165,578	*	—	—	*	—
Hamid Khoja, Ph.D. ⁽⁵⁾	167,774	*	—	—	*	—
Ruben A. Garcia	—	—	—	—	—	—
Robert Hoffman ⁽⁶⁾	78,127	*	—	—	*	—
Victoria Niklas, M.D. ⁽⁷⁾	78,127	*	—	—	*	—
Richard Cilento, Jr., MBA ⁽⁸⁾	163,852	*	—	—	*	—
Stacy Coen, MBA ⁽⁹⁾	78,127	*	—	—	*	—
Matthew Link ⁽¹⁰⁾	78,127	*	—	—	*	—
Directors and Executive Officers as a Group (9 persons)⁽¹¹⁾	7,514,130	21.2%	2,500	100%	61.4%	—

Name and address of Beneficial Owner	Beneficial Ownership After the Offering					Percentage of Total Voting Power ⁽¹⁾
	Common Stock		Series C Preferred Stock		Percentage of Total Voting Power ⁽¹⁾	
	Shares	%	Shares	%		
5% Stockholders:						
Golden Knight Incorporated, L.P. ⁽²⁾	2,125,001	5.5%	—	—	—	3.2%
Executive Officers and Directors						
Pete O'Heeron, MSHA ⁽³⁾	6,704,418	17.2%	2,500	100%	58.5%	—
Mark Andersen, CPA CFA ⁽⁴⁾	165,578	*	—	—	*	—
Hamid Khoja, Ph.D. ⁽⁵⁾	167,774	*	—	—	*	—
Ruben A. Garcia	—	—	—	—	—	—
Robert Hoffman ⁽⁶⁾	78,127	*	—	—	*	—
Victoria Niklas, M.D. ⁽⁷⁾	78,127	*	—	—	*	—
Richard Cilento, Jr., MBA ⁽⁸⁾	163,852	*	—	—	*	—
Stacy Coen, MBA ⁽⁹⁾	78,127	*	—	—	*	—
Matthew Link ⁽¹⁰⁾	78,127	*	—	—	*	—
Directors and Executive Officers as a Group (9 persons)⁽¹¹⁾	7,514,130	19.3%	2,500	100%	59.7%	—

* Less than 1%.

- (1) After giving effect to the rights of the Series C Preferred Stock, upon the Direct Listing, to 13,000 votes per share.
- (2) Michael F. Newlin and Cindy L. Newlin, as General Partners of Golden Knight Incorporated, L.P., share discretionary authority to vote and dispose of the shares directly held by Golden Knight Incorporated, L.P. and may be deemed to be the beneficial owners of such shares. The address for Golden Knight Incorporated, L.P. is 3773 Howard Hughes Pkwy, Suite 500S, Las Vegas, NV 89189-6014.
- (3) Common Stock shares include 6,048,147 shares of common stock and 656,271 vested stock options to purchase common stock. The 2,500 shares of Series C Preferred Stock held constitute the maximum number of Series C Preferred Stock we are authorized to issue. Each share of Series C Preferred Stock is entitled to 13,000 votes. For as long as they remain outstanding, the Series C Preferred Stock are subject to an irrevocable proxy issued by Pete O'Heeron in favor and for the benefit of our board of directors, as more particularly described in this prospectus.
- (4) Common Stock shares include 165,578 vested stock options to purchase common stock.
- (5) Common Stock shares include 1,250 shares of common stock and 166,524 vested stock options to purchase common stock.
- (6) Common Stock shares include 7500 shares of common stock and 70,627 vested stock options to purchase common stock.
- (7) Common Stock shares include 7,500 shares of common stock and 70,627 vested stock options to purchase common stock.
- (8) Common Stock shares include 93,225 shares of common stock and 70,627 vested stock options to purchase common stock.
- (9) Common Stock shares include 7,500 shares of common stock and 70,627 vested stock options to purchase common stock.
- (10) Common Stock shares include 7,500 shares of common stock and 70,627 vested stock options to purchase common stock.
- (11) The 2,500 shares of Series C Preferred Stock held constitute the maximum number of Series C Preferred Stock we are authorized to issue. Each share of Series C Preferred Stock is entitled to 13,000 votes. For as long as they remain outstanding, the Series C Preferred Stock are subject to an irrevocable proxy issued by Pete O'Heeron in favor and for the benefit of our board of directors, as more particularly described in this prospectus.

DESCRIPTION OF OUR SECURITIES

General

The following description summarizes certain important terms of our capital stock. We adopted an amended and restated certificate of incorporation that became effective in connection with the Direct Listing, and this description summarizes the provisions included in such document. Because it is only a summary, it does not contain all the information that may be important to you. For a complete description of the matters set forth in this section titled “*Description of Capital Stock*,” you should refer to our amended and restated certificate of incorporation and our bylaws, which are included as exhibits to the registration statement of which this prospectus forms a part, and to the applicable provisions of Delaware law.

In connection with the Direct Listing, (i) all of our outstanding Series A Preferred Stock, all of which were held by FibroGenesis, were automatically canceled without the payment of additional consideration by or to the holder thereof, (ii) all of our outstanding non-voting common stock automatically converted, without the payment of additional consideration by or to the holder thereof, into voting common stock, on a one-for-one basis, (iii) all of our outstanding Series B Preferred Stock and all of our outstanding Series B-1 Preferred Stock automatically converted, without the payment of additional consideration by or to the holder thereof, into common stock, on a one-for-one basis and (iv) all of our outstanding Series C Preferred Stock remained Series C Preferred Stock. Immediately after the Direct Listing, our issued and outstanding capital stock consisted of voting common stock and Series C Preferred Stock.

Our amended and restated certificate of incorporation and our bylaws, authorize us to issue 150,000,000 shares of capital stock, which may consist of: (i) 100,000,000 shares of voting common stock, par value \$0.00001 per share, (ii) 30,000,000 shares of non-voting common stock, par value \$0.00001 per share, and (iii) 20,000,000 shares of preferred stock, par value \$0.00001 per share, of which 2,500 shares are designated as Series C Preferred Stock.

After giving effect to the Reverse Stock Split and the automatic conversion, in connection with the Direct Listing, of all of our outstanding non-voting common stock and convertible preferred stock (being our Series B Preferred Stock and Series B-1 Preferred Stock), as of January 31, 2024, there were 32,492,068 shares of our voting common stock outstanding, held by 1,169 stockholders of record, and 2,500 shares of our Series C Preferred Stock, being all of the authorized Series C Preferred Stock, outstanding, held by one stockholder of record. Pursuant to our amended and restated certificate of incorporation, our board of directors will have the authority, without stockholder approval except as required by Nasdaq rules, to issue additional shares of our capital stock.

Common Stock

Our amended and restated certificate of incorporation provides that:

- holders of common stock have voting rights for the election of our directors and all other matters requiring stockholder action, except with respect to amendments to our certificate of incorporation that alter or change the powers, preferences, rights or other terms of any outstanding preferred stock if the holders of such affected series of preferred stock are entitled to vote on such an amendment;
- holders of common stock are entitled to one vote per share on matters to be voted on by stockholders and are also entitled to receive such dividends, if any, as may be declared from time to time by our board of directors in its discretion out of funds legally available therefor;
- the payment of dividends, if any, on the common stock will be subject to the prior payment of dividends on any outstanding preferred stock;
- upon our liquidation or dissolution, the holders of common stock will be entitled to receive *pro rata* all assets remaining available for distribution to stockholders after payment of all liabilities and provision for the liquidation of any shares of preferred stock outstanding at that time; and
- our stockholders have no conversion, preemptive or other subscription rights and there are no sinking fund or redemption provisions applicable to the common stock.

Preferred Stock

Our amended and restated certificate of incorporation provides that shares of preferred stock may be issued from time to time in one or more series. Our board of directors is authorized to fix the voting rights, if any, designations, powers, preferences, the relative, participating, optional or other special rights, if any, and any qualifications, limitations and restrictions thereof, applicable to the shares of each series. Our board of directors is able to, without stockholder approval, issue preferred stock with voting and other rights that could adversely affect the voting power and other rights of the holders of the common stock and could have anti-takeover effects. The ability of our board of directors to issue preferred stock without stockholder approval could have the effect of delaying, deferring or preventing a change of our control or the removal of our existing management.

Series C Preferred Stock

There is currently one series of designated preferred stock, being the Series C Preferred Stock, 2,500 total shares of which are authorized and all of which 2,500 authorized shares of Series C Preferred Stock are issued, outstanding and held by Pete O'Heeron, our founder, Chief Executive Officer and Chairperson of our board of directors. The outstanding shares of Series C Preferred Stock are fully paid and nonassessable.

The Series C Preferred Stock rank senior to our common stock upon our liquidation, dissolution, winding up or otherwise.

The Series C Preferred Stock is entitled to vote on any matter to be voted on by our stockholders, in each case voting together with the holders of our common stock as a single class, and each share of Series C Preferred Stock is entitled to 13,000 votes. The Series C Preferred Stock is entitled to receive the same prior notice of any meeting of stockholders as provided to our common stockholders.

The Series C Preferred Stock is not entitled to any dividend, whether payable in cash, stock or property.

Subject to the superior rights of other, then outstanding, classes or series of preferred stock, in the event of any liquidation, dissolution or winding up of our company, the Series C Preferred Stock shall be entitled to receive, prior and in preference to any distribution in such liquidation, dissolution or winding up of any of our assets to the holders of our common stock, a liquidation preference of \$18.00 per share (subject to appropriate adjustment in the event of any stock split, combination or other similar recapitalization).

The Series C Preferred Stock may be converted at any time as follows:

- At the option of the holder, a share of Series C Preferred Stock may be converted into one share of our common stock; and
- Upon the election of the holders of a majority of the then outstanding shares of Series C Preferred Stock, all outstanding shares of Series C Preferred Stock may be converted into an equal number of shares of our common stock, on a one-for-one basis.

In addition, the Series C Preferred Stock is subject to a mandatory conversion upon any transfer of the Series C Preferred Stock. Each share of Series C Preferred Stock shall automatically convert, without the payment of additional consideration by or to the holder thereof, into one fully paid and non-assessable share of our common stock, upon any transfer of any share of Series C Preferred Stock, whether or not for value. Any shares of Series C Preferred Stock converted as described above must be retired and cancelled and may not be reissued as shares of such series.

For as long as the Series C Preferred Stock remain outstanding, the aggregate number of shares of Series C Preferred Stock then outstanding, shall be proportionately adjusted for any increase or decrease in the number of issued shares of our common stock resulting from a subdivision or combination of our common stock or other similar recapitalization, in each case effected without our receipt of consideration.

The Series C Preferred Stock is subject to an irrevocable proxy issued by Pete O'Heeron, the holder of all of the Series C Preferred Stock, in favor and for the benefit of, our board of directors, granting our board of directors the irrevocable proxy, for as long as the Series C Preferred Stock remains outstanding, to vote all of the Series C Preferred Stock on all matters on which the Series C Preferred Stock are entitled to vote, in any manner that our board of directors may determine in its sole and absolute discretion; provided, however, that such irrevocable proxy shall not, without the written consent of Pete O'Heeron, permit our board of directors to vote the Series C Preferred Stock with respect to any proposal to amend, delete or waive any rights of Pete O'Heeron with respect to the Series C Preferred Stock as set forth in our amended and restated certificate of incorporation. In light of the superior voting rights associated with the Series C Preferred Stock, the irrevocable proxy is intended to ensure that such superior voting rights are utilized in our best interest and to avoid or mitigate conflicts that may arise in the future for Pete O'Heeron as an individual stockholder employee.

Warrants Being Offered in this Offering

The following summary of certain terms and provisions of the Warrants included in the Units offered hereby and the Warrant Agency Agreement is not complete and is subject to, and qualified in its entirety by the provisions of the form of Warrant, which is filed as an exhibit to the registration statement of which this prospectus is a part. Prospective investors should carefully review the terms and provisions set forth in the form of Warrant and such Warrant Agency Agreement.

Exercisability. The Warrants are exercisable immediately and at any time up to the date that is five years after their original issuance. The Warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and by payment in full for the number of shares of common stock purchased upon such exercise. If a registration statement registering the issuance of the shares of common stock underlying the Warrants under the Securities Act is not effective and an exemption from registration is not available, the holder may elect to exercise the Warrants through a cashless exercise, in which case the holder would receive upon such exercise the net number of shares of common stock determined according to the formula set forth in the Warrants. No fractional shares of common stock will be issued in connection with the exercise of a Warrant. In lieu of fractional shares, we will in our election either pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price or round up to the nearest whole share.

Exercise Limitation. A holder will not have the right to exercise any portion of the Warrant if the holder (together with its affiliates) would beneficially own in excess of 4.99% (or, at the election of the investor, 9.99%) of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the Warrants. However, any holder may increase or decrease such percentage to any other percentage not in excess of 9.99%, provided that any increase in such percentage shall not be effective until 61 days following notice from the holder to us.

Exercise Price. The exercise price per whole share of common stock purchasable upon exercise of the Warrants is equal to 100% of the offering price per Unit. The exercise price is subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock.

Cashless Exercise. If, at the time a holder exercises its Warrants, a registration statement registering the issuance of the shares of common stock underlying the Warrants under the Securities Act is not then effective or available, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the Warrants.

Call option. We have the right to “call” any portion of a holder’s Warrants by delivering a call notice to the holder within 30 days after we publicly announce []. After delivery of a call notice, the Warrants will continue to be exercisable. Each Warrant will be canceled and no longer exercisable to the extent the holder fails to timely exercise the Warrant for the called portion thereof within 20 trading days following our issuance of a call notice, provided that to the extent the exercise of a called portion of a Warrant would cause the holder to hold shares of our common stock in excess of a specified beneficial ownership limitation, upon exercise of such portion, as set forth in the Warrant, instead of shares being issued, the exercise would result in the modification of the terms of such portion to be consistent with certain specified terms .

Transferability. Subject to applicable laws, the Warrants may be offered for sale, sold, transferred or assigned without our consent.

Adjustments; Fundamental Transactions. The exercise price and the number of shares underlying the Warrants are subject to appropriate adjustment in the event of stock splits, stock dividends on our shares of common stock, stock combinations or similar events affecting our shares of common stock. In addition, in the event of a fundamental transaction, as described in the Warrants and generally including any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of the voting power of our outstanding capital stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding capital stock, the holders of the Warrants will be entitled to receive upon exercise of the Warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the Warrants immediately prior to such fundamental transaction.

Rights as a Stockholder. Except as otherwise provided in the Warrants or by virtue of such holder's ownership of shares of our common stock, the holder of a Warrant does not have the rights or privileges of a holder of our common stock, including any voting rights, until the holder exercises the Warrant.

Exchange Listing. We do not intend to apply for the listing of the Warrants offered in this offering on any stock exchange. Without an active trading market, the liquidity of the Warrants will be limited.

Amendment. The Warrants may be modified or amended with the written consent of the Company and the holders thereof.

Anti-Takeover Effects of our Certificate of Incorporation, Bylaws and Delaware Law

Our amended and restated certificate of incorporation and bylaws include a number of provisions that may have the effect of delaying, deferring or preventing another party from acquiring control of us and encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our board of directors rather than pursue non-negotiated takeover attempts. These provisions include the items described below.

Classified Board

Our amended and restated certificate of incorporation requires our board of directors to be divided into three classes serving staggered three-year terms, with one class elected each year. The classification of directors has the effect of making it more difficult for stockholders to change the composition of our board of directors.

Stockholder Actions by Written Consent

Our amended and restated certificate of incorporation requires that, any action required or permitted to be taken by our stockholders must be effected at a duly-called annual or special meeting of our stockholders and may not be effected by written consent in lieu of a meeting.

Advance Notice Requirements

Our bylaws establish advance notice procedures with regard to stockholder proposals relating to the nomination of candidates for election as directors or new business to be brought before meetings of our stockholders. These procedures specify that notice of stockholder proposals must be timely given in writing to our corporate secretary prior to the meeting at which the action is to be taken, and define what is considered timely. Our bylaws specify the requirements as to form and content of all stockholder notices. These requirements may preclude stockholders from bringing matters before the stockholders at an annual or special meeting.

Director Removal and Vacancies

Our amended and restated certificate of incorporation requires that, a member of our board of directors or our entire board may only be removed for cause, and then only by the affirmative vote of the holders of at least 66^{2/3}% in voting power of our stock entitled to vote on such removal. In addition, our amended and restated certificate of incorporation requires that, any newly created directorship that results from an increase in the number of directors or any vacancy on our board of directors, must be filled solely by the affirmative vote of a majority of the total number of directors then in office, even if less than a quorum, or by a sole remaining director and may not be filled by the stockholders.

Supermajority Voting Requirements

Our amended and restated certificate of incorporation requires the affirmative vote of the holders of at least 66^{2/3}% in voting power of our stock entitled to vote thereon to (i) amend, alter or repeal our bylaws and adopt new bylaws or (ii) to amend, alter, change or repeal, or adopt any provision inconsistent with, certain provisions of our certificate of incorporation, including the provisions relating to the requirement to have a classified board, the provisions relating to the removal of directors, the provision precluding stockholder action by written consent and the choice of forum provision in our amended and restated certificate of incorporation (as explained below).

Undesignated Preferred Stock

Our amended and restated certificate of incorporation provides for authorized shares of preferred stock. The existence of authorized but unissued shares of preferred stock may enable our board of directors to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of our shareholders, our board of directors could cause shares of preferred stock to be issued without shareholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent shareholder or shareholder group. In this regard, our amended and restated certificate of incorporation grants our board of directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring or preventing a change in our control.

Exclusive Forum

Our amended and restated certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the (i) Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) shall, to the fullest extent permitted by law, be the sole and exclusive forum for (a) any derivative action or proceeding brought on our behalf, (b) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (c) any action arising pursuant to any provision of the DGCL, our certificate of incorporation or our bylaws or (d) any action asserting a claim governed by the internal affairs doctrine and (ii) 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 or causes of action arising under the Securities Act, including all causes of action asserted against any defendant to such complaint. The foregoing provision would not preclude stockholders that assert claims under the Exchange Act from bringing such claims in federal court, to the extent that the Exchange Act confers exclusive federal jurisdiction over such claims, subject to applicable law. Our choice of forum provision may impose additional litigation costs on stockholders in pursuing claims and may limit a stockholder's ability to bring a claim in a judicial forum that it believes to be favorable for disputes with us or any of our directors, officers or other employees, which may discourage lawsuits with respect to such claims.

Limitation of Liability and Indemnification of Directors and Officers

Our bylaws provide that our directors and officers will be indemnified by us to the fullest extent authorized by Delaware law.

These provisions may discourage stockholders from bringing a lawsuit against our directors for breach of their fiduciary duty. These provisions also may have the effect of reducing the likelihood of derivative litigation against directors and officers, even though such an action, if successful, might otherwise benefit us and our stockholders. Furthermore, a stockholder's investment may be adversely affected to the extent we pay the costs of settlement and damage awards against directors and officers pursuant to these indemnification provisions. We believe that these provisions and insurance are necessary to attract and retain talented and experienced directors and officers. In addition, we entered into separate indemnification agreements with each of our directors and executive officers.

Section 203 of the DGCL

As a Delaware corporation, we are subject to the provisions of Section 203 of the DGCL. This statute prevents certain Delaware corporations, under certain circumstances, from engaging in a "business combination" with an "interested stockholder." In general, Section 203 defines an "interested stockholder" as an entity or person who, together with the person's affiliates and associates, beneficially owns 15% or more of the outstanding voting stock of the corporation.

A "business combination" includes a merger or sale of more than 10% of our assets. However, the above provisions of Section 203 of the DGCL do not apply if:

- the business combination takes place more than three years after the interested stockholder became an "interested stockholder;"
- our board of directors approves the transaction that made the stockholder an "interested stockholder" prior to the date of the transaction;
- after the completion of the transaction that resulted in the stockholder becoming an interested stockholder, that stockholder owned at least 85% of our voting stock outstanding, other than statutorily excluded shares of common stock; or
- on or subsequent to the date of the transaction, the business combination is approved by our board of directors and authorized at a meeting of our stockholders, and not by written consent, by an affirmative vote of at least two-thirds of the outstanding voting stock not owned by the interested stockholder.

Listing

Our common stock commenced trading on The Nasdaq Global Market under the symbol "FBLG" on January 31, 2024.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is VStock Transfer LLC. The transfer agent and registrar's address is 18 Lafayette Place, Woodmere, NY 11598. The transfer agent and registrar can be contacted by phone at: (212) 828-8436.

PLAN OF DISTRIBUTION

We are offering up to a maximum of 1,801,801 Units, based on an assumed public offering price of \$11.10 per Unit, which represents the closing price of our common stock on The Nasdaq Global Market on April 23, 2024, for gross proceeds of up to \$20.0 million before deduction of placement agent commissions and offering expenses, in a best-efforts offering. There is no minimum amount of proceeds that is a condition to closing of this offering. The actual amount of gross proceeds, if any, in this offering could vary substantially from the gross proceeds from the sale of the maximum amount of securities being offered in this prospectus.

Pursuant to a placement agency agreement, dated as of _____, 2024, we have engaged Maxim Group LLC to act as our exclusive placement agent to solicit offers to purchase the securities offered by this prospectus. The placement agent is not purchasing or selling any securities, nor is it required to arrange for the purchase and sale of any specific number or dollar amount of securities, other than to use its “best efforts” to arrange for the sale of the securities by us. Therefore, we may not sell the entire amount of securities being offered. Investors purchasing securities offered hereby will have the option to execute a securities purchase agreement with us. In addition to the rights and remedies available to all investors in this offering under federal and state securities laws, the investors which enter into a securities purchase agreement will also be able to bring claims of breach of contract against us. Investors who do not enter into a securities purchase agreement shall rely solely on this prospectus in connection with the purchase of our securities in this offering. The placement agent may engage one or more subagents or selected dealers in connection with this offering.

The placement agency agreement provides that the placement agent’s obligations are subject to conditions contained in the placement agency agreement.

We will deliver the securities being issued to the investors upon receipt of investor funds for the purchase of the securities offered pursuant to this prospectus. There is no arrangement for funds to be received in escrow, trust or similar arrangement and the Units will be offered at a fixed price and are expected to be issued in a single closing. We expect to deliver the securities being offered pursuant to this prospectus on or about _____, 2024.

Placement Agent Fees, Commissions and Expenses

Upon the closing of this offering, we will pay the placement agent a cash transaction fee equal to 7.0% of the aggregate gross cash proceeds to us from the sale of the securities in the offering. We paid the placement agent \$15,000 (the “Advance”) as an advance against certain out-of-pocket expenses upon execution of an engagement letter and agreed to reimburse reasonable and documented out-of-pocket expenses of the placement agent, including fees and expenses of outside counsel, up to \$85,000 (including the Advance). Any portion of the Advance not offset by actual expenses will be returned to us in accordance with Financial Industry Regulation Authority Rule 5110(g)(4)(A).

The following table shows the public offering price, placement agent fees and proceeds, before expenses, to us.

	<u>Per Unit</u>	<u>Total</u>
Public offering price	\$	\$
Placement agent fees ⁽¹⁾	\$	\$
Proceeds, before expenses, to us	\$	\$

(1) Does not include additional compensation the Placement Agent will receive and reimbursement for out-of-pocket expenses incurred in connection with this offering as described above.

We estimate that the total expenses of the offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding the placement agent commission, will be approximately \$0.2 million, all of which are payable by us. This figure includes, among other things, the placement agent’s fees and expenses (including the legal fees, costs and expenses for the placement agent’s legal counsel) up to \$85,000.

Upon consummation of this offering, we agreed to pay to the placement agent a tail fee equal to the cash compensation in this offering, if we receive proceeds from any investor who was contacted or introduced by the placement agent in connection with this offering in any other financing of equity or equity-linked capital-raising activity during the 12-month period following the completion of this offering.

Lock-Up Agreements

We and our officers and directors have agreed, subject to limited exceptions, including issuances by us of securities in accordance with the GEM SPA, for a period of ninety (90) days after the closing of this offering, not to offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise dispose of, directly or indirectly any shares of common stock or any securities convertible into or exchangeable for our common stock either owned as of the date of the placement agent agreement or thereafter acquired without the prior written consent of the placement agent, provided, however, that we shall not file publicly a registration statement on Form S-1 related to the GEM SPA until thirty (30) days after the closing of this offering. The placement agent may, in its sole discretion and at any time or from time to time before the termination of the lock-up period, without notice, release all or any portion of the securities subject to lock-up agreements.

Indemnification

We have agreed to indemnify the placement agent against certain liabilities, including liabilities under the Securities Act, and to contribute to payments that the placement agent may be required to make for these liabilities.

Regulation M

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the resale of the securities sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the placement agent acting as principal. Under these rules and regulations, the placement agent (i) may not engage in any stabilization activity in connection with our securities and (ii) may not bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until it has completed its participation in the distribution.

Right of First Refusal

For a period of nine months after the closing of this offering, Maxim has a right of first refusal to act as sole managing underwriter and sole book runner, sole placement agent, or sole sales agent, for any and all future public or private equity, equity-linked or debt (excluding commercial bank debt) offerings for which we retain the service of an underwriter, agent, advisor, finder or other person or entity in connection with such offering during such nine-month period for us, or any successor to us or any of our subsidiaries. We shall not offer to retain any entity or person in connection with any such offering on terms more favorable than terms on which we offer to retain Maxim. Such offer shall be made in writing in order to be effective. Maxim shall notify us within ten business days of its receipt of the written offer contemplated above as to whether or not it agrees to accept such retention. If Maxim should decline such retention, we shall have no further obligations to Maxim with respect to the offering for which we have offered to retain Maxim.

Electronic Distribution

A prospectus in electronic format may be made available on a website maintained by the placement agent. In connection with the offering, the placement agent or selected dealers may distribute prospectuses electronically. No forms of electronic prospectus other than prospectuses that are printable as Adobe® PDF will be used in connection with this offering.

Other than the prospectus in electronic format, the information on the placement agent's website and any information contained in any other website maintained by the placement agent is not part of the prospectus or the registration statement of which this prospectus forms a part, has not been approved and/or endorsed by us or the placement agent in its capacity as placement agent and should not be relied upon by investors.

Certain Relationships

The placement agent and its affiliates have provided and may in the future provide, from time to time, investment banking and financial advisory services to us in the ordinary course of business, for which they may receive customary fees and commissions.

Determination of Offering Price and Warrant Exercise Price

The actual offering price of the securities we are offering, and the exercise price of the Warrants included in the Units that we are offering, were negotiated between us, the placement agent and the investors in the offering based on the trading of our shares of common stock prior to the offering, among other things. Other factors considered in determining the public offering price of the securities we are offering, as well as the exercise price of the Warrants that we are offering include our history and prospects, the stage of development of our business, our business plans for the future and the extent to which they have been implemented, an assessment of our management, the general conditions of the securities markets at the time of the offering and such other factors as were deemed relevant.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is vStock Transfer LLC, at 18 Lafayette Place, Woodmere, NY 11598. The transfer agent's telephone number is (212) 828-8436.

Offer Restrictions Outside the United States

Other than in the United States, no action has been taken by us or the placement agent that would permit a public offering by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that country or jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

Australia

This prospectus is not a disclosure document under Chapter 6D of the Australian Corporations Act, has not been lodged with the Australian Securities and Investments Commission and does not purport to include the information required of a disclosure document under Chapter 6D of the Australian Corporations Act. Accordingly, (i) the offer of the securities under this prospectus is only made to persons to whom it is lawful to offer the securities without disclosure under Chapter 6D of the Australian Corporations Act under one or more exemptions set out in section 708 of the Australian Corporations Act, (ii) this prospectus is made available in Australia only to those persons as set forth in clause (i) above, and (iii) the offeree must be sent a notice stating in substance that by accepting this offer, the offeree represents that the offeree is such a person as set forth in clause (i) above, and, unless permitted under the Australian Corporations Act, agrees not to sell or offer for sale within Australia any of the securities sold to the offeree within 12 months after its transfer to the offeree under this prospectus.

Canada

The securities may be sold in Canada only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws. Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor. Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the placement agent is not required to comply with the disclosure requirements of NI33-105 regarding underwriter conflicts of interest in connection with this offering.

China

The information in this document does not constitute a public offer of the securities, whether by way of sale or subscription, in the People's Republic of China (excluding, for purposes of this paragraph, Hong Kong Special Administrative Region, Macau Special Administrative Region and Taiwan). The securities may not be offered or sold directly or indirectly in the PRC to legal or natural persons other than directly to "qualified domestic institutional investors."

European Economic Area-Belgium, Germany, Luxembourg and Netherlands

The information in this document has been prepared on the basis that all offers of securities will be made pursuant to an exemption under the Directive 2003/71/EC (“Prospectus Directive”), as implemented in Member States of the European Economic Area (each, a “Relevant Member State”), from the requirement to produce a prospectus for offers of securities.

An offer to the public of securities has not been made, and may not be made, in a Relevant Member State except pursuant to one of the following exemptions under the Prospectus Directive as implemented in that Relevant Member State:

- to legal entities that are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities;
- to any legal entity that has two or more of (i) an average of at least 250 employees during its last fiscal year; (ii) a total balance sheet of more than €43,000,000 (as shown on its last annual unconsolidated or consolidated financial statements) and (iii) an annual net turnover of more than €50,000,000 (as shown on its last annual unconsolidated or consolidated financial statements);
- to fewer than 100 natural or legal persons (other than qualified investors within the meaning of Article 2(1)(e) of the Prospectus Directive) subject to obtaining the prior consent of the Company or any underwriter for any such offer; or
- in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of securities shall result in a requirement for the publication by the Company of a prospectus pursuant to Article 3 of the Prospectus Directive.

France

This document is not being distributed in the context of a public offering of financial securities (offre au public de titres financiers) in France within the meaning of Article L.411-1 of the French Monetary and Financial Code (Code Monétaire et Financier) and Articles 211-1 et seq. of the General Regulation of the French Autorité des marchés financiers (“AMF”). The securities have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France.

This document and any other offering material relating to the securities have not been, and will not be, submitted to the AMF for approval in France and, accordingly, may not be distributed or caused to be distributed, directly or indirectly, to the public in France.

Such offers, sales and distributions have been and shall only be made in France to (i) qualified investors (investisseurs qualifiés) acting for their own account, as defined in and in accordance with Articles L.411-2-II-2 and D.411-1 to D.411-3, D.744-1, D.754-1 ;and D.764-1 of the French Monetary and Financial Code and any implementing regulation and/or (ii) a restricted number of non-qualified investors (cercle restreint d’investisseurs) acting for their own account, as defined in and in accordance with Articles L.411-2-II-2° and D.411-4, D.744-1, D.754-1; and D.764-1 of the French Monetary and Financial Code and any implementing regulation.

Pursuant to Article 211-3 of the General Regulation of the AMF, investors in France are informed that the securities cannot be distributed (directly or indirectly) to the public by the investors otherwise than in accordance with Articles L.411-1, L.411-2, L.412-1 and L.621-8 to L.621-8-3 of the French Monetary and Financial Code.

Ireland

The information in this document does not constitute a prospectus under any Irish laws or regulations and this document has not been filed with or approved by any Irish regulatory authority as the information has not been prepared in the context of a public offering of securities in Ireland within the meaning of the Irish Prospectus (Directive 2003/71/EC) Regulations 2005 (the “Prospectus Regulations”). The securities have not been offered or sold, and will not be offered, sold or delivered directly or indirectly in Ireland by way of a public offering, except to (i) qualified investors as defined in Regulation 2(l) of the Prospectus Regulations and (ii) fewer than 100 natural or legal persons who are not qualified investors.

Israel

The securities offered by this prospectus have not been approved or disapproved by the Israeli Securities Authority (the ISA), or ISA, nor have such securities been registered for sale in Israel. The securities may not be offered or sold, directly or indirectly, to the public in Israel, absent the publication of a prospectus. The ISA has not issued permits, approvals or licenses in connection with the offering or publishing the prospectus; nor has it authenticated the details included herein, confirmed their reliability or completeness, or rendered an opinion as to the quality of the securities being offered. Any resale in Israel, directly or indirectly, to the public of the securities offered by this prospectus is subject to restrictions on transferability and must be effected only in compliance with the Israeli securities laws and regulations.

Italy

The offering of the securities in the Republic of Italy has not been authorized by the Italian Securities and Exchange Commission (Commissione Nazionale per le Società e la Borsa, “CONSOB” pursuant to the Italian securities legislation and, accordingly, no offering material relating to the securities may be distributed in Italy and such securities may not be offered or sold in Italy in a public offer within the meaning of Article 1.1(t) of Legislative Decree No. 58 of 24 February 1998 (“Decree No. 58”), other than:

- to Italian qualified investors, as defined in Article 100 of Decree no.58 by reference to Article 34-ter of CONSOB Regulation no. 11971 of 14 May 1999 (“Regulation no. 11971”) as amended (“Qualified Investors”); and
- in other circumstances that are exempt from the rules on public offer pursuant to Article 100 of Decree No. 58 and Article 34-ter of Regulation No. 11971 as amended.

Any offer, sale or delivery of the securities or distribution of any offer document relating to the securities in Italy (excluding placements where a Qualified Investor solicits an offer from the issuer) under the paragraphs above must be:

- made by investment firms, banks or financial intermediaries permitted to conduct such activities in Italy in accordance with Legislative Decree No. 385 of 1 September 1993 (as amended), Decree No. 58, CONSOB Regulation No. 16190 of 29 October 2007 and any other applicable laws; and
- in compliance with all relevant Italian securities, tax and exchange controls and any other applicable laws.

Japan

The securities have not been and will not be registered under Article 4, paragraph 1 of the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948), as amended (the “FIEL”) pursuant to an exemption from the registration requirements applicable to a private placement of securities to Qualified Institutional Investors (as defined in and in accordance with Article 2, paragraph 3 of the FIEL and the regulations promulgated thereunder). Accordingly, the securities may not be offered or sold, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan other than Qualified Institutional Investors. Any Qualified Institutional Investor who acquires securities may not resell them to any person in Japan that is not a Qualified Institutional Investor, and acquisition by any such person of securities is conditional upon the execution of an agreement to that effect.

Portugal

This document is not being distributed in the context of a public offer of financial securities (oferta pública de valores mobiliários) in Portugal, within the meaning of Article 109 of the Portuguese Securities Code (Código dos Valores Mobiliários). The securities have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in Portugal. This document and any other offering material relating to the securities have not been, and will not be, submitted to the Portuguese Securities Market Commission (Comissão do Mercado de Valores Mobiliários) for approval in Portugal and, accordingly, may not be distributed or caused to be distributed, directly or indirectly, to the public in Portugal, other than under circumstances that are deemed not to qualify as a public offer under the Portuguese Securities Code. Such offers, sales and distributions of securities in Portugal are limited to persons who are “qualified investors” (as defined in the Portuguese Securities Code). Only such investors may receive this document and they may not distribute it or the information contained in it to any other person.

Sweden

This document has not been, and will not be, registered with or approved by Finansinspektionen (the Swedish Financial Supervisory Authority). Accordingly, this document may not be made available, nor may the securities be offered for sale in Sweden, other than under circumstances that are deemed not to require a prospectus under the Swedish Financial Instruments Trading Act (1991:980) (Sw. lag (1991:980) om handel med finansiella instrument). Any offering of securities in Sweden is limited to persons who are “qualified investors” (as defined in the Financial Instruments Trading Act). Only such investors may receive this document and they may not distribute it or the information contained in it to any other person.

Switzerland

The securities may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (“SIX”) or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering material relating to the securities may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering material relating to the securities have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of securities will not be supervised by, the Swiss Financial Market Supervisory Authority (FINMA).

This document is personal to the recipient only and not for general circulation in Switzerland.

United Arab Emirates

Neither this document nor the securities have been approved, disapproved or passed on in any way by the Central Bank of the United Arab Emirates or any other governmental authority in the United Arab Emirates, nor has the Company received authorization or licensing from the Central Bank of the United Arab Emirates or any other governmental authority in the United Arab Emirates to market or sell the securities within the United Arab Emirates. This document does not constitute and may not be used for the purpose of an offer or invitation. No services relating to the securities, including the receipt of applications and/or the allotment or redemption of such securities, may be rendered within the United Arab Emirates by the Company.

No offer or invitation to subscribe for securities is valid or permitted in the Dubai International Financial Centre.

United Kingdom

Neither the information in this document nor any other document relating to the offer has been delivered for approval to the Financial Services Authority in the United Kingdom and no prospectus (within the meaning of section 85 of the Financial Services and Markets Act 2000, as amended (“FSMA”) has been published or is intended to be published in respect of the securities. This document is issued on a confidential basis to “qualified investors” (within the meaning of section 86(7) of FSMA) in the United Kingdom, and the securities may not be offered or sold in the United Kingdom by means of this document, any accompanying letter or any other document, except in circumstances which do not require the publication of a prospectus pursuant to section 86(1) FSMA. This document should not be distributed, published or reproduced, in whole or in part, nor may its contents be disclosed by recipients to any other person in the United Kingdom.

Any invitation or inducement to engage in investment activity (within the meaning of section 21 of FSMA) received in connection with the issue or sale of the securities has only been communicated or caused to be communicated and will only be communicated or caused to be communicated in the United Kingdom in circumstances in which section 21(1) of FSMA does not apply to the Company.

In the United Kingdom, this document is being distributed only to, and is directed at, persons (i) who have professional experience in matters relating to investments falling within Article 19(5) (investment professionals) of the Financial Services and Markets Act 2000 (Financial Promotions) Order 2005 (“FPO”), (ii) who fall within the categories of persons referred to in Article 49(2)(a) to (d) (high net worth companies, unincorporated associations, etc.) of the FPO or (iii) to whom it may otherwise be lawfully communicated (together “relevant persons”). The investments to which this document relates are available only to, and any invitation, offer or agreement to purchase will be engaged in only with, relevant persons. Any person who is not a relevant person should not act or rely on this document or any of its contents.

CERTAIN MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following is a general discussion of certain material U.S. federal income tax considerations relating to the acquisition, ownership and disposition of Units, consisting of shares of common stock and Warrants, the acquisition, ownership, and disposition of shares of common stock acquired as part of the Units, the exercise, disposition, or expiration of Warrants acquired as part of the Units, the acquisition, ownership, and disposition of shares of common stock received upon exercise of the Warrants (the “warrant shares”), all as acquired pursuant to this prospectus. Because the shares of common stock and Warrants are immediately separable and will be issued separately, the holder of a Unit generally should be treated, for U.S. federal income tax purposes, as the owner of the underlying share of common stock and one Investor Warrant that comprise the Unit, as the case may be. As a result, the discussion below with respect to actual holders of shares of common stock and Warrants should also apply to holders of Units (as the deemed owners of the underlying common stock and Warrants that comprise the Units).

This discussion is based on current provisions of the Internal Revenue Code of 1986, as amended (the “Internal Revenue Code”), existing and proposed U.S. Treasury Regulations promulgated or proposed thereunder and current administrative and judicial interpretations thereof, all as in effect as of the date of this prospectus and all of which are subject to change or to differing interpretation, possibly with retroactive effect. This summary does not discuss the potential effects, whether adverse or beneficial, of any proposed legislation that, if enacted, could be applied on a retroactive or prospective basis. We have not sought and will not seek any rulings from the Internal Revenue Service (the “IRS”), regarding the matters discussed below. There can be no assurance that the IRS or a court will not take a contrary position.

This discussion is limited to U.S. holders and non-U.S. holders (each as defined below) who are initial purchasers of a Unit pursuant to this offering and hold Units, shares of common stock, Warrants, or warrant shares, as applicable, as a capital asset within the meaning of Section 1221 of the Internal Revenue Code (generally, as property held for investment). This discussion does not address all aspects of U.S. federal income taxation, such as the U.S. alternative minimum income tax and the additional tax on net investment income, nor does it address any aspect of state, local or non-U.S. taxes, or U.S. federal taxes other than income taxes, such as federal estate and gift taxes. Except as provided below, this summary does not address tax reporting requirements. This discussion does not consider any specific facts or circumstances that may apply to a holder and does not address the special tax considerations that may be applicable to particular holders, such as:

- insurance companies;
- tax-exempt organizations and governmental organizations;
- banks or other financial institutions;
- brokers or dealers in securities or foreign currency;
- traders or dealers in securities who elect to apply a mark-to-market method of accounting;
- real estate investment trusts, regulated investment companies or mutual funds;
- pension plans;
- controlled foreign corporations;
- passive foreign investment companies;
- corporations organized outside the United States, any state thereof, or the District of Columbia that are nonetheless treated as U.S. persons for U.S. federal income tax purposes;
- persons that own (directly, indirectly or constructively) more than 5% of the total voting power or total value of our common stock;
- corporations that accumulate earnings to avoid U.S. federal income tax;

- persons subject to the alternative minimum tax;
- U.S. expatriates and certain former citizens or long-term residents of the United States;
- U.S. holders (as defined below) that have a “functional currency” other than the U.S. dollar;
- persons that acquire Units, shares of common stock, Warrants or warrant shares as compensation for services;
- owners that hold our stock as part of a straddle, hedge, conversion transaction, synthetic security or other integrated investment;
- holders subject to special accounting rules;
- S corporations (and shareholders thereof);
- partnerships or other entities or arrangements treated as partnerships or other “pass-through” entities for U.S. federal income tax purposes (and partners or other owners thereof); and
- U.S. holders that are subject to taxing jurisdictions other than, or in addition to, the United States with respect to their Units, shares of common stock, Warrants or warrant shares, or that hold such securities in connection with a trade or business, permanent establishment or fixed base outside the United States.

If an entity or arrangement taxable as a partnership (or other pass-through” entity) for U.S. federal income tax purposes holds our Units, shares of common stock, Warrants or warrant shares, the U.S. federal income tax treatment of such entity (or arrangement) and the partners (or other owners) of such entity generally will depend on the status of the partners, the activities of the entity and certain determinations made at the partner level. This summary does not address the tax consequences to any such owner. Partners (or other owners) of entities or arrangements that are classified as partnerships or as “pass-through” entities for U.S. federal income tax purposes should consult their own tax advisors regarding the U.S. federal, U.S. federal net investment income, U.S. federal alternative minimum, U.S. federal estate and gift, U.S. state and local, and non-U.S. tax consequences arising from and relating to the acquisition, ownership, and disposition our Units, shares of common stock, Warrants or warrant shares.

For purposes of this discussion, the term “U.S. holder” means a beneficial owner of our Units, shares of common stock, Warrants or warrant shares that is, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized in or under the laws of the United States, any state thereof or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if (1) a U.S. court is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have authority to control all substantial decisions of the trust or (2) the trust has a valid election to be treated as a U.S. person under applicable U.S. Treasury Regulations.

A “non-U.S. holder” is a beneficial owner of our Units, shares of common stock, Warrants or warrant shares that is neither a U.S. holder nor a partnership (or other entity treated as a partnership for U.S. federal income tax purposes).

THIS DISCUSSION IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT, AND IS NOT INTENDED TO BE, LEGAL OR TAX ADVICE. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE, LOCAL, AND NON-U.S. INCOME, ESTATE AND OTHER TAX CONSIDERATIONS OF ACQUIRING, HOLDING AND DISPOSING OF OUR UNITS, SHARES OF COMMON STOCK, WARRANTS OR WARRANT SHARES.

U.S. Federal Income Tax Consequences of the Acquisition and Disposition of Units

No statutory, administrative or judicial authority directly addresses the treatment of a Unit or any instrument similar to a Unit for U.S. federal income tax purposes and, therefore, that treatment is not entirely clear. For U.S. federal income tax purposes, the acquisition by a U.S. holder or a non-U.S. holder of a Unit should be treated as the acquisition of one share of common stock and one Investor Warrant that comprise the Unit. The purchase price for each Unit will be allocated among these two components in proportion to their relative fair market values at the time the Unit is purchased. Under U.S. federal income tax law, each investor must make his or her own determination of such value based on all the relevant facts and circumstances. Therefore, we strongly urge each investor to consult his or her tax advisor regarding the determination of value for these purposes. This allocation of the purchase price for each Unit will establish a U.S. holder's or non-U.S. holder's initial tax basis for U.S. federal income tax purposes in the one share of common stock and the one Investor Warrant that comprise each Unit.

For U.S. federal income tax purposes, the disposition of a Unit will be treated for U.S. federal income tax purposes as a disposition of the one share of common stock and the one Investor Warrant that comprise the Unit, and the amount realized on the disposition will be allocated among these two components in proportion to their relative fair market values (as determined by each such holder based on all the relevant facts and circumstances) at the time of disposition. The separation of the shares of common stock and Warrants comprising the Units should not be a taxable event for U.S. federal income tax purposes.

The foregoing treatment of the Units, shares of common stock and Warrants and a holder's allocation are not binding on the IRS or the courts. Because there are no authorities that directly address instruments that are similar to the Units, no assurance can be given that the IRS or a U.S. court will respect the characterization of the Units or a holder's allocation set forth above. Each U.S. holder and non-U.S. holder should consult its own tax advisor regarding the tax consequences of an investment in a Unit (including alternative characterizations of a Unit). The balance of this discussion assumes that the characterization of the Units described above will be respected for U.S. federal income tax purposes.

U.S. Holders

U.S. Federal Income Tax Consequences of the Exercise, Disposition or Expiration of Warrants or Certain Adjustments to the Warrants

Exercise of Warrants

A U.S. holder should not recognize gain or loss on the exercise of Warrants and related receipt of warrant shares (unless cash is received in lieu of the issuance of a fractional warrant share). A U.S. holder's initial tax basis in the warrant shares received on the exercise of Warrants should be equal to the sum of (a) such U.S. holder's tax basis in such Warrants plus (b) the exercise price paid by such U.S. holder on the exercise of such Warrants. It is unclear whether a U.S. holder's holding period for the warrant shares received on the exercise of Warrants would commence on the date of exercise of the Warrants or the day following the date of exercise of the Warrants.

In certain limited circumstances, a U.S. holder may be permitted to undertake a cashless exercise of Warrants into warrant shares. The U.S. federal income tax treatment of a cashless exercise of Warrants into warrant shares is unclear, and the tax consequences of a cashless exercise could differ from the consequences upon the exercise of Warrants described in the preceding paragraph. A cashless exercise may not be taxable, either because the exercise is not a realization event or because the exercise is treated as a recapitalization for U.S. federal income tax purposes. In either situation, a U.S. holder's basis in the warrant shares received would equal the holder's basis in the Warrants exercised therefor. If the cashless exercise were treated as not being a realization event, it is unclear whether a U.S. holder's holding period for the warrant shares received on the cashless exercise of Warrants would commence on the date of exercise of the Warrants or the day following the date of exercise of the Warrants. If the cashless exercise were treated as a recapitalization, the holding period of the warrant shares would include the holding period of the Warrants exercised therefor.

It is also possible that a cashless exercise could be treated in part as a taxable exchange in which gain or loss would be recognized. In such event, a U.S. holder could be deemed to have surrendered a number of Warrants having a fair market value equal to the exercise price for the total number of Warrants to be exercised. The U.S. holder would recognize capital gain or loss in an amount equal to the difference between the fair market value of the Warrants deemed surrendered and the U.S. holder's tax basis in the Warrants deemed surrendered. In this case, a U.S. holder's aggregate tax basis in the warrant shares received would equal the sum of the U.S. holder's tax basis in the Warrants deemed exercised and the exercise price of such Warrants. It is unclear whether a U.S. holder's holding period for the warrant shares received would commence on the date of the deemed exercise of the Warrants or the day following the date of the deemed exercise of the Warrants.

Because of the absence of authority on the U.S. federal income tax treatment of a cashless exercise, there can be no assurance which, if any, of the alternative tax consequences and holding periods described above would be adopted by the IRS or a U.S. court. U.S. holders should consult their own tax advisors regarding the U.S. federal income tax consequences of a cashless exercise of Warrants.

Disposition of Warrants

A U.S. holder will recognize gain or loss on the sale or other taxable disposition of an Investor Warrant in an amount equal to the difference, if any, between (a) the amount of cash plus the fair market value of any property received and (b) such U.S. holder's tax basis in the Investor Warrant sold or otherwise disposed of. Any such gain or loss generally will be a capital gain or loss, which will be long-term capital gain or loss if the Investor Warrant is held for more than one year. Deductions for capital losses are subject to complex limitations under the Internal Revenue Code.

Expiration of Warrants Without Exercise

Upon the lapse or expiration of an Investor Warrant, a U.S. holder will recognize a loss in an amount equal to such U.S. holder's tax basis in the Investor Warrant. Any such loss generally will be a capital loss and will be long-term capital loss if the Investor Warrant is held for more than one year. Deductions for capital losses are subject to complex limitations under the Internal Revenue Code.

Certain Adjustments to the Warrants

Under Section 305 of the Internal Revenue Code, an adjustment to the number of warrant shares that will be issued on the exercise of the Warrants, or an adjustment to the exercise price of the Warrants, may be treated as a constructive distribution to a U.S. holder of the Warrants if, and to the extent that, such adjustment has the effect of increasing such U.S. holder's proportionate interest in the "earnings and profits" or our assets, depending on the circumstances of such adjustment (for example, if such adjustment is to compensate for a distribution of cash or other property to our shareholders). Adjustments to the exercise price of Warrants made pursuant to a bona fide reasonable adjustment formula that has the effect of preventing dilution of the interest of the holders of the Warrants should generally not be considered to result in a constructive distribution. Any such constructive distribution would be taxable whether or not there is an actual distribution of cash or other property. (See more detailed discussion of the rules applicable to distributions made by us at "*Distributions on Shares of Common Stock and Warrant Shares*" below).

U.S. Federal Income Tax Consequences of the Ownership, and Disposition of Shares of Common Stock and Warrant Shares

Distributions on Shares of Common Stock and Warrant Shares

A U.S. holder that receives a distribution, including a constructive distribution, with respect to a share of common stock or warrant share (as well as any constructive distribution on an Investor Warrant as described above) will be required to include the amount of such distribution in gross income as a dividend to the extent of our current and accumulated “earnings and profits”, as computed under U.S. federal income tax principles. To the extent that a distribution exceeds our current and accumulated “earnings and profits”, such distribution will be treated first as a tax-free return of capital to the extent of a U.S. holder’s tax basis in the shares of common stock or warrant shares and thereafter as gain from the sale or exchange of such shares of common stock or warrant shares (see “*Sale or Other Taxable Disposition of Shares of Common Stock and/or Warrant Shares*” below). Dividends received on shares of common stock or warrant shares may be eligible for a dividends received deduction, subject to certain restrictions relating to, among others, the corporate U.S. holder’s holding period. With certain exceptions (including, but not limited to, dividends treated as investment income for purposes of investment interest deduction limitations), dividends paid by us to non-corporate U.S. holders, including individuals, generally will be eligible for the preferential tax rates applicable to long-term capital gains for dividends, provided certain holding period and other conditions are satisfied. The dividend rules are complex, and each U.S. holder should consult its own tax advisor regarding the application of such rules.

Sale or Other Taxable Disposition of Shares of Common Stock and/or Warrant Shares

Upon the sale or other taxable disposition of shares of common stock or warrant shares, a U.S. holder generally will recognize capital gain or loss in an amount equal to the difference between (a) the amount of cash plus the fair market value of any property received and (b) such U.S. holder’s tax basis in such shares of common stock or warrant shares sold or otherwise disposed of. Gain or loss recognized on such sale or other taxable disposition generally will be long-term capital gain or loss if, at the time of the sale or other taxable disposition, the shares of common stock or warrant shares have been held for more than one year. Preferential tax rates may apply to long-term capital gain of a U.S. holder that is an individual, estate, or trust. There are no preferential tax rates for long-term capital gain of a U.S. holder that is a corporation. Deductions for capital losses are subject to significant limitations under the Internal Revenue Code.

Non-U.S. Holders

U.S. Federal Income Tax Consequences of the Exercise, Disposition or Expiration of Warrants or Certain Adjustments to the Warrants

Exercise or Expiration (Without Exercise) of Warrants

The U.S. federal income tax treatment of a non-U.S. holder’s exercise of an Investor Warrant, or the expiration (without exercise) of an *Investor Warrant* held by a non-U.S. holder, will correspond to the U.S. federal income tax treatment of the exercise of an Investor Warrant by a U.S. holder or the expiration (without exercise) of an Investor Warrant held by a U.S. holder, as described above under “U.S. Holders—Exercise of Warrants” and “U.S. Holders—Expiration of Warrants Without Exercise,” respectively, although to the extent of a cashless exercise results in a taxable exchange of Warrants, the consequences would be similar to those described below in “Non-U.S. Holders—Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Warrants and Warrant Shares.”

Certain Adjustments to the Warrants

Under Section 305 of the Internal Revenue Code, an adjustment to the number of warrant shares that will be issued on the exercise of the Warrants, or an adjustment to the exercise price of the Warrants, may be treated as a constructive distribution to a non-U.S. holder of the Warrants if, and to the extent that, such adjustment has the effect of increasing such non-U.S. holder’s proportionate interest in our “earnings and profits” or assets, depending on the circumstances of such adjustment (for example, if such adjustment is to compensate for a distribution of cash or other property to our shareholders). Adjustments to the exercise price of a Investor Warrant made pursuant to a bona fide reasonable adjustment formula that has the effect of preventing dilution of the interest of the holders of the Warrants should generally not result in a constructive distribution. See the more detailed discussion of the rules applicable to distributions made by us under the heading “*Distributions on Shares of Common Stock and Warrant Shares*” below.

U.S. Federal Income Tax Consequences of the Acquisition, Ownership, and Disposition of Shares of Common Stock and Warrant Shares

Distributions on Shares of Common Stock and Warrant Shares

If we pay distributions of cash or property with respect to our shares of common stock or warrant shares, those distributions generally will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in its shares of common stock or warrants shares, as applicable. Any remaining excess will be treated as capital gain, subject to the tax treatment described below under the heading "*- Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Warrants and Warrant Shares.*" Dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate, or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence. In the case of any constructive distribution, it is possible that this tax would be withheld from any amount owed to the non-U.S. holder, including, but not limited to, distributions of cash, shares of common stock or sales proceeds subsequently paid or credited to that holder. If we are unable to determine, at the time of payment of a distribution, whether the distribution will constitute a dividend, we may nonetheless choose to withhold any U.S. federal income tax on the distribution as permitted by U.S. Treasury Regulations. If we are a USRPHC (as defined below) and we do not qualify for the Regularly Traded Exception (as defined below), distributions that exceed our current and accumulated earnings and profits will be subject to a 15% withholding tax unless an application for a withholding certificate is filed to reduce or eliminate such withholding.

Distributions that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States (or, if an income tax treaty applies, attributable to a permanent establishment maintained by the non-U.S. holder in the United States) are generally not subject to the 30% (or lower rate as may be specified by an applicable tax treaty) withholding tax if the non-U.S. holder provides a properly executed IRS Form W-8ECI stating that the distributions are not subject to withholding because they are effectively connected with the non-U.S. holder's conduct of a trade or business in the United States. If a non-U.S. holder is engaged in a trade or business in the United States and the distribution is effectively connected with the conduct of that trade or business (or, if an income tax treaty applies, the distribution is attributable to a permanent establishment maintained by the non-U.S. holder in the United States), the distribution will generally have the consequences described above for a U.S. holder (subject to any modification provided under an applicable income tax treaty). Any U.S. effectively connected income (or, under an applicable income tax treaty, income attributable to a permanent establishment maintained by a non-U.S. holder in the United States) received by a non-U.S. holder that is treated as a corporation for U.S. federal income tax purposes may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate (or such lower rate as may be specified by an applicable income tax treaty).

A non-U.S. holder who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BEN-E, as applicable, and satisfy applicable certification and other requirements. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty generally may obtain a refund or credit of any excess amounts withheld by timely filing an appropriate claim with the IRS. Non-U.S. holders should consult their own tax advisors regarding their entitlement to benefits under a relevant income tax treaty.

Gain on Sale, Exchange or Other Taxable Disposition of Shares of Common Stock, Warrants and Warrant Shares

Subject to the discussions below in “*Information Reporting and Backup Withholding*” and “*-Foreign Account Tax Compliance Act,*” a non-U.S. holder generally will not be subject to U.S. federal income tax on gain recognized on a sale, exchange or other taxable disposition of our shares of common stock, Warrants, or warrant shares unless:

- the gain is effectively connected with the non-U.S. holder’s conduct of a trade or business in the United States and, if an applicable income tax treaty so provides, the gain is attributable to a permanent establishment maintained by the non-U.S. holder in the United States; in these cases, the non-U.S. holder will be taxed on a net income basis at the regular graduated rates and in the manner applicable to a U.S. holder, and, if the non-U.S. holder is a corporation, an additional branch profits tax at a rate of 30%, or a lower rate as may be specified by an applicable income tax treaty, may also apply;
- the non-U.S. holder is an individual present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty) on the amount by which such non-U.S. holder’s capital gains allocable to U.S. sources exceed capital losses allocable to U.S. sources during the taxable year of the disposition; or
- we are or have been a “U.S. real property holding corporation” (“USRPHC”) for U.S. federal income tax purposes at any time during the shorter of the non-U.S. holder’s holding period or the 5-year period ending on the date of disposition of shares of common stock, Warrants or warrant shares; provided, with respect to the shares of common stock and warrant shares, that as long as our shares of common stock are regularly traded on an established securities market as determined under the U.S. Treasury Regulations (the “**Regularly Traded Exception**”), a non-U.S. holder would not be subject to taxation on the gain on the sale of shares of common stock or warrant shares under this rule unless the non-U.S. holder has owned: (i) more than 5% of our shares of common stock at any time during such 5-year or shorter period; (ii) Warrants with a fair market value on the date acquired by such holder greater than the fair market value on that date of 5% of our shares of common stock; or (iii) aggregate equity securities of ours with a fair market value on the date acquired in excess of 5% of the fair market value of our shares of common stock on such date (in any case, a “**5% Shareholder**”). Since the Warrants are not expected to be listed on a securities market, the Warrants are unlikely to qualify for the Regularly Traded Exception. In determining whether a non-U.S. holder is a 5% Shareholder, certain attribution rules apply in determining ownership for this purpose. We can provide no assurances that we are not currently, or will not become, a USRPHC, or if we are or become a USRPHC, that the shares of common stock, Warrants or warrant shares will meet the Regularly Traded Exception at the time a non-U.S. holder purchases such securities or sells, exchanges or otherwise disposes of such securities. Non-U.S. holders should consult with their own tax advisors regarding the consequences to them of investing in a USRPHC. If we are a USRPHC, a non-U.S. holder will be taxed as if any gain or loss were effectively connected with the conduct of a trade or business as described above in “*Distributions on Shares of Common Stock and Warrant Shares*” and a buyer of our common stock, Warrants or warrant shares from such holder may be required to withhold U.S. federal income tax at a rate of 15% of the amount realized by the non-U.S. holder, in the event that (i) such holder is a 5% Shareholder, or (ii) the Regularly Traded Exception is not satisfied during the relevant period. We will be classified as a USRPHC if the fair market value of our “United States real property interests” equals or exceeds 50% of the sum of the fair market value of our worldwide real property interests plus our other assets used or held for use in a trade or business, as determined for U.S. federal income tax purposes.

Information Reporting and Backup Withholding

Distributions on our common stock and warrant shares, and the payment of the proceeds of a disposition of, our Units, shares of common stock, Warrants and warrant shares generally will be subject to information reporting if made within the United States or through certain U.S.-related financial intermediaries. Information returns are required to be filed with the IRS and copies of information returns may be made available to the tax authorities of the country in which a holder resides or is incorporated under the provisions of a specific treaty or agreement.

Backup withholding may also apply if the holder fails to provide certification of exempt status or a correct U.S. taxpayer identification number and otherwise comply with the applicable backup withholding requirements. Generally, a holder will not be subject to backup withholding if it provides a properly completed and executed IRS Form W-9 or appropriate IRS Form W-8, as applicable. Backup withholding is not an additional tax. Amounts withheld under the backup withholding rules may be refunded or credited against the holder’s U.S. federal income tax liability, if any, provided certain information is timely filed with the IRS.

Foreign Account Tax Compliance Act

Sections 1471 through 1474 of the Internal Revenue Code (commonly referred to as “FATCA”) impose a separate reporting regime and potentially a 30% withholding tax on certain payments, including payments of dividends (including constructive dividends) on our shares of common stock and warrant shares. Withholding under FATCA generally applies to payments made to or through a foreign entity if such entity fails to satisfy certain disclosure and reporting rules. These rules generally require (i) in the case of a foreign financial institution, that the financial institution agree to identify and provide information in respect of financial accounts held (directly or indirectly) by U.S. persons and U.S.-owned entities, and, in certain instances, to withhold on payments to account holders that fail to provide the required information, and (ii) in the case of a non-financial foreign entity, that the entity either identify and provide information in respect of its substantial U.S. owners or certify that it has no such U.S. owners. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules. Under certain circumstances, a non-U.S. holder might be eligible for refunds or credits of such withholding taxes, and a non-U.S. holder might be required to file a U.S. federal income tax return to claim such refunds or credits.

FATCA withholding also potentially applies to payments of gross proceeds from the sale or other disposition of our shares of common stock and warrant shares. Proposed U.S. Treasury Regulations, however, would eliminate FATCA withholding on such payments, and the U.S. Treasury Department has indicated that taxpayers may rely on this aspect of the proposed U.S. Treasury Regulations until final U.S. Treasury Regulations are issued.

Non-U.S. holders typically will be required to furnish certifications (generally on the applicable IRS Form W-8) or other documentation to provide the information required by FATCA or to establish compliance with or an exemption from withholding under FATCA. FATCA withholding may apply where payments are made through a non-U.S. intermediary that is not FATCA compliant, even where the non-U.S. holder satisfies the holder’s own FATCA obligations.

The United States and a number of other jurisdictions have entered into intergovernmental agreements to facilitate the implementation of FATCA. Any applicable intergovernmental agreement may alter one or more of the FATCA information reporting and withholding requirements. You are encouraged to consult with your own tax advisor regarding the possible implications of FATCA on your investment in our shares of common stock or warrant shares, including the applicability of any intergovernmental agreements.

THE ABOVE SUMMARY IS NOT INTENDED TO CONSTITUTE A COMPLETE ANALYSIS OF ALL TAX CONSIDERATIONS APPLICABLE TO PROSPECTIVE INVESTORS WITH RESPECT TO THE ACQUISITION, OWNERSHIP, AND DISPOSITION OF UNITS, SHARES OF COMMON STOCK, WARRANTS OR WARRANT SHARES. PROSPECTIVE INVESTORS SHOULD CONSULT THEIR OWN TAX ADVISORS AS TO THE TAX CONSIDERATIONS APPLICABLE TO THEM IN LIGHT OF THEIR OWN PARTICULAR CIRCUMSTANCES.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Norton Rose Fulbright US LLP, Houston, Texas. The placement agent is being represented by Thompson Hine LLP, New York, New York in connection with this offering.

EXPERTS

The financial statements of FibroBiologics, Inc. as of and for the years ended December 31, 2023 and 2022 have been audited by Withum Smith+Brown, PC, an independent registered public accounting firm, as stated in their report incorporated by reference herein. Such audited financial statements have been so included in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act, with respect to the shares of common stock being offered by this prospectus. This prospectus, which constitutes part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement.

We are subject to the information and reporting requirements of the Exchange Act and, in accordance with such law, will file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC. You may obtain documents that we file with the SEC at www.sec.gov. Our website address is www.fibrobiologics.com. We do not incorporate the information on or accessible through our website into this prospectus, and you should not consider any information on, or that can be accessed through, our website as part of this prospectus. Our website address is included in this prospectus as an inactive textual reference only.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

SEC rules permit us to “incorporate by reference” certain information into this prospectus, which means that we can disclose important information about us by referring you to another document filed separately with the SEC. The information incorporated by reference is considered to be a part of this prospectus, except for information superseded by information contained in this prospectus or in any subsequently filed incorporated document. Because we are incorporating by reference future filings with the SEC, this prospectus is continually updated and those future filings may modify or supersede some of the information included or incorporated in this prospectus. This means that you must carefully review all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus or in any document previously incorporated by reference have been modified or superseded. However, we undertake no obligation to update or revise any statements we make, except as required by law.

This prospectus incorporates by reference the documents listed below and any filings we make with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (in each case, other than those documents or the portions of those documents furnished and not filed with the SEC) on or after the date of this prospectus and prior to the termination of the offering covered by this prospectus:

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2023, filed with the SEC on February 29, 2024; and
- our Current Reports on Form 8-K, filed with the SEC on [February 2, 2024](#), [February 6, 2024](#), [February 8, 2024](#), [February 14, 2024](#) and [February 20, 2024](#) (except, in each case, any information, including exhibits, furnished and not filed with the SEC).

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference in this prospectus will be deemed to be modified or superseded to the extent that a statement contained in this prospectus or in any subsequently filed document which is or is deemed to be incorporated by reference in this prospectus modifies or supersedes that statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We will furnish without charge to each person, including any beneficial owner, to whom a prospectus is delivered, upon written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. Any such request may be made by writing or calling us at the following address or phone number:

FibroBiologics, Inc.
455 E. Medical Center Blvd.
Suite 300
Houston, Texas 77598
(281) 671-5150



FibroBiologics, Inc.

**Up to 1,801,801 Units, each consisting of
One Share of Common Stock and
One Warrant to Purchase One Share of Common Stock
1,801,801 Shares of Common Stock Underlying the Warrants**

PRELIMINARY PROSPECTUS

, 2024

Sole Placement Agent

Maxim Group LLC

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. *Other Expenses of Issuance and Distribution*

The following table sets forth the costs and expenses payable by us in connection with this registration statement and the listing of our common stock. All amounts shown are estimates except for the SEC registration fee.

	Amount
SEC registration fee	\$ 5,904
Legal fees and expenses	185,000
Accounting fees and expenses	20,000
Printing and engraving expenses	5,000
Transfer agent fees and expenses	5,000
FINRA fees	3,500
Miscellaneous expenses	1,500
Total	\$ 225,904

Item 14. *Indemnification of Directors and Officers*

We are incorporated under the laws of the State of Delaware. Section 145 of the DGCL provides that a Delaware corporation may indemnify any person who was or is, or is threatened to be made, a party to any threatened, pending, or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of such corporation), by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding, if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person's conduct was unlawful.

Section 145 of the DGCL also provides that a Delaware corporation may indemnify any person who was or is, or is threatened to be made, a party to any threatened, pending, or completed action or suit by or in the right of the corporation by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the corporation, except that no indemnification of any claim, issue or matter is permitted without judicial approval if such person is adjudged to be liable to the corporation.

Under the DGCL, where a present or former officer or director is successful on the merits or otherwise in the defense of any action referred to above, or in defense of any claim, issue or matter therein, the corporation must indemnify such present or former officer or director against the expenses (including attorney's fees) which such present or former officer or director actually and reasonably incurred in connection with such action (or claim, issue or matter therein).

Section 102(b)(7) of the DGCL permits a corporation to provide in its certificate of incorporation that a director or officer of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duties as a director or officer, except for liability for any:

- breach of a director's or officer's duty of loyalty to the corporation or its stockholders;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- in the case of a director, unlawful payment of dividends or unlawful stock purchase or redemption;
- transaction from which the director or officer derived an improper personal benefit; or
- in the case of an officer, any action by or in the right of the corporation.

Our amended and restated certificate of incorporation contains a provision that precludes any director or officer of ours from being personally liable to us or our stockholders for monetary damages for breach of fiduciary duty as a director or officer, except for the aforementioned liabilities which we are not permitted to eliminate or limit under Section 102(b)(7) of the DGCL.

In addition, our amended and restated certificate of incorporation and bylaws, in each case, require us to indemnify, and advance expenses to, to the fullest extent permitted by law, any person who was or is, or is threatened to be made, a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative by reason of the fact that the person is or was our director, officer, employee or agent, or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise.

Our bylaws authorize us to purchase and maintain insurance on behalf of any person who is or was our director, officer, employee or agent, or is or was serving at our request as a director, officer, employee or agent of another corporation, partnership, joint venture, trust, enterprise or nonprofit entity against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not we would have the power to indemnify such person against such liability under the provisions of the DGCL.

We maintain an insurance policy covering our officers and directors with respect to certain liabilities, including liabilities arising under the Securities Act. In addition, we entered into separate indemnification agreements with each of our directors and executive officers.

Item 15. *Recent Sales of Unregistered Securities*

The following sets forth information regarding all unregistered securities we have issued since our inception. Unless stated otherwise, the sale of the securities listed below were deemed to be exempt from registration pursuant to Section 4(a)(2) of the Securities Act, including Regulation D and Rule 506 promulgated thereunder, as transactions by an issuer not involving a public offering.

Series A Preferred Stock

In connection with our formation, on April 8, 2021, we issued the equivalent of 8,750,000 shares of our Series A Preferred Stock to FibroGenesis in return for rights to certain intellectual property through the Patent Assignment Agreement and the Intellectual Property Cross-License Agreement. See "*Business—Intellectual Property*" for additional details. No underwriters were involved in the sale of the securities.

Non-Voting Common Stock

In January 2022, we issued an aggregate of the equivalent of 37,500 shares of our non-voting common stock for no cash consideration to five of our independent directors, the equivalent of 7,500 shares each, for their service on our board of directors.

In March 2022, we issued the equivalent of 12,500 shares and 1,250 shares, respectively, of our non-voting common stock for no cash consideration to Dr. An and Dr. Khoja for services provided.

In August 2022, we issued the equivalent of 28,179,592 of our nonvoting common stock to our parent company, FibroGenesis.

Series B Preferred Stock

In December 2022, we issued an aggregate of the equivalent of 381,658 shares of Series B Preferred Stock to investors in a private placement, at a price the equivalent of \$6.76 with respect to the equivalent of 318,049 shares, with the remaining equivalent of 63,609 shares being bonus shares.

From February 2023 through April 2023, we issued an aggregate of the equivalent of 890,310 shares of our Series B Preferred Stock to investors in a Regulation Crowdfunding offering, at a price the equivalent of \$6.76 as to the equivalent of 724,937 shares, with the remaining equivalent of 143,225 shares and equivalent of 22,148 shares being bonus and commission shares, respectively. The sales of the foregoing securities were issued pursuant to the exemption provided by Section 4(a)(6) of the Securities Act.

In March and April 2023, we issued an aggregate of the equivalent of 1,680,084 shares of our Series B Preferred Stock to investors in private placements, at a price the equivalent of \$6.76 as to the equivalent of 1,527,349 shares, with the remaining equivalent of 152,735 shares being bonus shares.

Series B-1 Preferred Stock

From April 2023 through September 2023, we issued an aggregate of the equivalent of 74,922 shares of our Series B-1 Preferred Stock to investors in a private placement, at prices ranging from the equivalent of \$18.00 to \$20.00 per share as to the equivalent of 64,070 shares, with the remaining equivalent of 10,852 shares being bonus shares. In connection with a portion of such private placement of our Series B-1 Preferred Stock, we also agreed to issue warrants, exercisable for a period of three years from their issuance date, to purchase an aggregate of the equivalent of an aggregate of 8,890 shares of our common stock at an exercise price of the equivalent of \$20.00 per share. In November 2023, the Company issued a total of 14,859 additional shares of Series B-1 Preferred Stock and 1,431 additional warrants to purchase shares of common stock to investors who subscribed to purchase shares of Series B-1 Preferred Stock at a price per share that exceeded the reference price per share expected in the Direct Listing.

Series C Preferred Stock

In January 2024, in conjunction with our Direct Listing, we issued 2,500 shares of Series C Preferred Stock with super voting rights to our CEO for no consideration.

Voting Common Stock

In February 2024, we issued 142,298 shares of our voting common stock to GEM for approximately \$1.8 million of net proceeds, pursuant to the draw-down notice we issued under the GEM SPA to have GEM purchase up to 900,000 shares of the Company's common stock at a draw-down threshold price of no less than \$15.00 per share, which was closed after 142,298 shares of our common stock were purchased at \$13.50 per share. We then authorized a reduction of the draw-down threshold price to no less than \$13.50 per share, and GEM submitted one additional closing notice in March 2024 after 84,759 shares of our common stock were purchased pursuant to the GEM SPA at \$12.15 per share for net cash proceeds of approximately \$1.0 million.

Warrants

In January 2024, in accordance with the GEM SPA, we issued a warrant to purchase up to 1,299,783 shares of our voting common stock with an initial exercise price of \$21.54 per share to GYBL for no consideration.

Item 16. Exhibits and Financial Statement Schedules

Exhibits

See the Exhibit Index immediately preceding the signature page hereto for a list of exhibits filed as part of this registration statement, which Exhibit Index is incorporated herein by reference.

Financial Statement Schedules

All financial statement schedules are omitted because the information called for is not required or is shown either in the financial statements or in the accompanying notes.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the "Calculation of Filing Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, that paragraphs (a)(1)(i), (ii), and (iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act, that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act to any purchaser, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(5) That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

(c) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

EXHIBIT INDEX

Exhibit No.

- 1.1 [Form of Placement Agent Agreement](#)
- 3.1 [Amended and Restated Certificate of Incorporation of the registrant, as currently in effect \(incorporated by reference to Exhibit 3.1 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\)](#).
- 3.2 [Bylaws of the registrant, as currently in effect \(incorporated by reference to Exhibit 3.2 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\)](#).
- 4.1 Reference is made to exhibits [3.1](#) through [3.2](#).
- 4.2 [Form of Warrant of FibroBiologics, Inc. issued pursuant to the GEM Agreement \(incorporated by reference to Exhibit 4.2 to the Registration Statement on Form S-1/A filed on March 15, 2024 \(File No. 333-277019\)\)](#).
- 4.3 [Form of Warrant issued to Series B-1 Holders](#).
- 4.4 [Form of Warrant to be issued to Purchasers](#).
- 5.1 [Opinion of Norton Rose Fulbright US LLP](#).
- 10.1 [Intellectual Property Cross-License Agreement dated as of May 17, 2021, between SpinalCyte LLC and FibroBiologics, LLC \(incorporated by reference to Exhibit 10.1 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).
- 10.2 [Patent Assignment Agreement dated May 17, 2021, between SpinalCyte LLC and FibroBiologics, LLC \(incorporated by reference to Exhibit 10.2 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\)](#).
- 10.3 [Share Purchase Agreement dated as of November 12, 2021, by and among FibroBiologics, LLC GEM Global Yield LLC SCS and GEM Yield Bahamas Limited \(incorporated by reference to Exhibit 10.3 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\)](#).
- 10.4 [Registration Rights Agreement dated November 12, 2021, by and among FibroBiologics, LLC GEM Global Yield LLC SCS and GEM Yield Bahamas Limited \(incorporated by reference to Exhibit 10.4 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\)](#).
- 10.5 [Bridge Note dated April 1, 2021, between SpinalCyte LLC and FibroBiologics, Inc \(incorporated by reference to Exhibit 10.5 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).
- 10.6 [Sublease Agreement between United Fire & Casualty Company and FibroBiologics, Inc., effective October 5, 2022 \(incorporated by reference to Exhibit 10.6 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).
- 10.7 [License Agreement, dated November 30, 2021, between K2 Biolabs, LLC and FibroBiologics, LLC \(incorporated by reference to Exhibit 10.7 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).
- 10.8 [Amendment No. 1, effective July 1, 2022, to the License Agreement between K2 Biolabs, LLC and FibroBiologics, Inc. \(incorporated by reference to Exhibit 10.8 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).
- 10.9 [Amendment No. 2, effective August 1, 2022, to the License Agreement between K2 Biolabs, LLC and FibroBiologics, Inc. \(incorporated by reference to Exhibit 10.9 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).
- 10.10 [Amendment No. 3, effective October 1, 2022, to the License Agreement between K2 Biolabs, LLC and FibroBiologics, Inc. \(incorporated by reference to Exhibit 10.10 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\)](#).

- 10.11 [Amendment No. 4, effective January 1, 2023, to the License Agreement between K2 Biolabs, LLC and FibroBiologics, Inc. \(incorporated by reference to Exhibit 10.11 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.12 [2022 Stock Plan \(incorporated by reference to Exhibit 10.12 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\).](#)
- 10.13 [Employment Agreement effective from July 20, 2021, between FibroBiologics, LLC and Hamid Khoja \(incorporated by reference to Exhibit 10.13 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.14 [Employment Agreement effective from May 31, 2022, between FibroBiologics, Inc. and Mark Andersen \(incorporated by reference to Exhibit 10.14 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.15 [Form of Indemnification Agreement between the Registrant and each of its Directors and Executive Officers \(incorporated by reference to Exhibit 10.15 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.16 [Energy Research Park Industrial Lease between University of Houston System, as Landlord, and FibroBiologics, Inc., as Tenant, effective August 1, 2023 \(incorporated by reference to Exhibit 10.16 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.17 [IP Transfer Agreement between SpinalCyte, LLC and FibroBiologics, LLC, dated as of May 17, 2021 \(incorporated by reference to Exhibit 10.17 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\).](#)
- 10.18 [Amendment 1 to the Patent Assignment Agreement, effective August 2, 2022 \(incorporated by reference to Exhibit 10.18 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\).](#)
- 10.19 [Agreement Regarding Right of First Negotiation dated January 20, 2023 \(incorporated by reference to Exhibit 10.19 to the Registration Statement on Form S-1/A filed on November 30, 2023 \(File No. 333-275361\)\).](#)
- 10.20 [Form of Stock Option Notice and Grant Agreement \(incorporated by reference to Exhibit 10.20 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.21 [Amendment 1 to Energy Research Park Industrial Lease between University of Houston System, as Landlord, and FibroBiologics, Inc., as Tenant, effective October 1, 2023 \(incorporated by reference to Exhibit 10.21 to the Registration Statement on Form S-1/A filed on March 15, 2024 \(File No. 333-277019\)\).](#)
- 10.22 [Employment Agreement effective from December 1, 2023, between FibroBiologics, Inc. and Pete O’Heeron \(incorporated by reference to Exhibit 10.22 to the Registration Statement on Form S-1/A filed on December 4, 2023 \(File No. 333-275361\)\).](#)
- 10.23 [Employment Agreement effective from March 1, 2024, between FibroBiologics, Inc. and Ruben Garcia \(incorporated by reference to Exhibit 10.24 to the Registration Statement on Form S-1/A filed on March 15, 2024 \(File No. 333-277019\)\).](#)
- 10.24 [Form of Securities Purchase Agreement](#)
- 10.25 [Form of Warrant Agent Agreement](#)
- 23.1 [Consent of Norton Rose Fulbright US LLP \(included in Exhibit 5.1\).](#)
- 23.2 [Consent of WithumSmith+Brown PC.](#)
- 23.3 [Consent of Howard An, M.D.](#)
- 24.1 [Power of Attorney \(included in the signature page to this registration statement\).](#)
- 107 [Filing Fee Table](#)

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Houston, State of Texas, on April 25, 2024.

FibroBiologics, Inc.

By: /s/ Pete O'Heeron
Pete O'Heeron
Chief Executive Officer

POWER OF ATTORNEY

We, the undersigned officers and directors of FibroBiologics, Inc., hereby severally constitute and appoint Pete O'Heeron and Mark Andersen, and each of them singly (with full power to each of them to act alone), our true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them for us and in our name, place and stead, and in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement (or any other registration statement for the same offering that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933), and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as full to all intents and purposes as we might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Pete O'Heeron</u> Pete O'Heeron	Chairperson and Chief Executive Officer (Principal Executive Officer)	April 25, 2024
<u>/s/ Mark Andersen</u> Mark Andersen	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	April 25, 2024
<u>/s/ Robert Hoffman</u> Robert Hoffman	Director	April 25, 2024
<u>/s/ Victoria Niklas</u> Victoria Niklas, M.D.	Director	April 25, 2024
<u>/s/ Richard Cilento</u> Richard Cilento	Director	April 25, 2024
<u>/s/ Stacy Coen</u> Stacy Coen	Director	April 25, 2024
<u>/s/ Matthew Link</u> Matthew Link	Director	April 25, 2024

PLACEMENT AGENCY AGREEMENT

April [●], 2024

Maxim Group LLC
300 Park Avenue, 16th Floor
New York, NY 10022
Ladies and Gentlemen:

Subject to the terms and conditions herein (this "Agreement"), FibroBiologics, Inc., a Delaware corporation (the "Company"), hereby agrees to sell up to an aggregate of \$20,000,000 of units (the "Units") of the Company, each Unit consisting of one share of the Company's common stock (the "Shares"), par value \$0.00001 per share (the "Common Stock") and one warrant to purchase one share of Common Stock (the "Warrants"), and the Common Stock underlying the Warrants, the "Warrant Shares" and together with the Shares, the "Securities") directly to various investors (each, an "Investor" and, collectively, the "Investors") through Maxim Group LLC as placement agent (the "Placement Agent"). The documents executed and delivered by the Company and the Investors in connection with the Offering (as defined below), including, without limitation, a securities purchase agreement (the "Purchase Agreement"), shall be collectively referred to herein as the "Transaction Documents." The purchase price to the Investors for each Unit is \$[●]. The Placement Agent may retain other brokers or dealers to act as sub-agents or selected-dealers on its behalf in connection with the Offering. Capitalized terms used herein and not otherwise defined shall have the meanings set forth for them in the Purchase Agreement

The Company hereby confirms its agreement with the Placement Agent as follows:

Section 1. Agreement to Act as Placement Agent.

(a) On the basis of the representations, warranties and agreements of the Company herein contained, and subject to all the terms and conditions of this Agreement, the Placement Agent shall be the exclusive placement agent in connection with the offering and sale by the Company of the Securities pursuant to the Company's registration statement on Form S-1 (File No. 333-[●]) (along with any Rule 462(b) Registration Statement (as hereinafter defined), the "Registration Statement"), with the terms of such offering (the "Offering") to be subject to market conditions and negotiations between the Company, the Placement Agent and the prospective Investors. The Placement Agent will act on a reasonable best efforts basis and the Company agrees and acknowledges that there is no guarantee of the successful placement of the Securities, or any portion thereof, in the prospective Offering. Under no circumstances will the Placement Agent or any of its "Affiliates" (as defined below) be obligated to underwrite or purchase any of the Securities for its own account or otherwise provide any financing. The Placement Agent shall act solely as the Company's agent and not as principal. The Placement Agent shall have no authority to bind the Company with respect to any prospective offer to purchase Securities and the Company shall have the sole right to accept offers to purchase Securities and may reject any such offer, in whole or in part. Subject to the terms and conditions hereof, payment of the purchase price for, and delivery of, the Securities shall be made at one or more closings (each, a "Closing" and the date on which each Closing occurs, a "Closing Date"). The Closing of the issuance of the Securities shall occur via "Delivery Versus Payment", i.e., on the Closing Date, the Company shall issue the Securities directly to the account designated by the Placement Agent and, upon receipt of such Securities, the Placement Agent shall electronically deliver such Securities to the applicable Investor and payment shall be made by the Placement Agent (or its clearing firm) by wire transfer to the Company. As compensation for services rendered, on each Closing Date, the Company shall pay to the Placement Agent the fees and expenses set forth below:

(i) A cash fee equal to 7.0% of the gross proceeds received by the Company from the sale of the Securities at the closing of the Offering (the "Closing").

(ii) The Company also agrees to reimburse Placement Agent's accountable expenses, payable immediately upon the Closing of the Offering, up to a maximum of \$85,000, less the \$15,000 advance for out-of-pocket accountable expenses previously paid by the Company to the Placement Agent (the "Advance"); *provided, however*, that such expense cap in no way limits or impairs the indemnification and contribution provisions of this Agreement. Notwithstanding the foregoing, any advance received by the Placement Agent will be reimbursed to the Company to the extent not actually incurred in compliance with Financial Industry Regulatory Authority ("FINRA") Rule 5110(g)(4)(A).

(iii) If within twelve (12) months following the Closing Date, the Company completes any financing of equity or equity-linked capital-raising activity with, or receives any proceeds from, any investors contacted or introduced by the Placement Agent in connection with the Offering, then the Company shall pay to the Placement Agent upon the closing of such financing or receipt of such proceeds, the cash compensation as described in Section 1(a) (i) herein. For the avoidance of doubt, the exercise of warrants issued in prior financing will not be considered a new financing for purposes of this paragraph. Notwithstanding the foregoing, the Company has a right of termination for Cause, and the exercise of such right of termination for Cause eliminates any of the Company's obligations with respect to this section. "Cause," for the purpose of this Agreement, shall mean, as determined by a court of competent jurisdiction, the Placement Agent's gross negligence, willful misconduct, or a material breach of this Agreement, after being notified in writing of such conduct, and not curing such alleged conduct within ten (10) calendar days of notification of such alleged wrongful conduct. On the Closing Date, the Placement Agent will provide the Company with a list of all investors contacted or introduced by the Placement Agent in connection with the Offering to whom this paragraph will apply.

(b) The term of the Placement Agent's exclusive engagement shall be until the earlier of (i) the final closing date of the Offering and (ii) 30 days from the date hereof (in the case of (ii), provided no Purchase Agreement has been executed by the Company). Notwithstanding anything to the contrary contained herein, the provisions concerning confidentiality, indemnification and contribution contained herein and the Company's obligations contained in the indemnification provisions will survive any expiration or termination of this Agreement, and the Company's obligation to pay fees actually earned and payable and to reimburse expenses actually incurred and reimbursable pursuant to Section 1 hereof and which are permitted to be reimbursed under FINRA Rule 5110(g)(4)(A), will survive any expiration or termination of this Agreement, *provided, however*, that if for any reason an Offering is not consummated, then the obligation of the Company to reimburse the Placement Agent for expenses shall not exceed \$25,000 in the aggregate (inclusive of the Advance). The Placement Agent agrees not to use any confidential information concerning the Company provided to the Placement Agent by the Company for any purposes other than those contemplated under this Agreement; *provided, however*, that nothing in this Agreement shall be construed to limit the ability of the Placement Agent or its Affiliates to pursue, investigate, analyze, invest in, or engage in investment banking, financial advisory or any other business relationship with Persons (as defined below) other than the Company. As used herein (i) "Persons" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind and (ii) "Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 405 under the Securities Act of 1933, as amended (the "Securities Act").

(c) Upon the Closing of the Offering, for a period of nine (9) months from the final Closing Date, the Company grants the Placement Agent the right of first refusal to act as sole managing underwriter and sole book runner, sole placement agent, or sole sales agent, for any and all future public or private equity, equity-linked or debt (excluding commercial bank debt) offerings, for which the Company retains the service of an underwriter, agent, advisor, finder or other person or entity in connection with such offering during such nine (9) month period of the Company, or any successor to or any subsidiary of the Company. During such nine (9) month period, the Company shall not offer to retain any entity or person in connection with any such offering on terms more favorable than terms on which it offers to retain the Placement Agent. Such offer shall be made in writing in order to be effective. The Placement Agent shall notify the Company within ten (10) business days of its receipt of the written offer contemplated above as to whether or not it agrees to accept such retention. If the Placement Agent should decline such retention, the Company shall have no further obligations to the Placement Agent with respect to the offering for which it has offered to retain the Placement Agent, except as otherwise provided for herein. Notwithstanding the foregoing, the Company has a right of termination for Cause, and the exercise of such right of termination for Cause eliminates any of the Company's obligations with respect to this section.

(d) Upon any Closing of the Offering, (i) the tail provision and right of first refusal provision, contained in Section 3(b) and Section 6, respectively, of the letter agreement between the Company and the Placement Agent, dated April 24, 2023 (the "First Letter Agreement"), and (ii) the tail provision, contained in Section 15(b) of the letter agreement between the Company and the Placement Agent, dated February 5, 2024 (the "Second Letter Agreement") and the right of first refusal contained in Sections 7 and 14 of the Second Letter Agreement, are hereby terminated and of no further force and effect. For the avoidance of doubt, if a Closing does not occur, this Section 1(d) shall not affect the rights of the Placement Agent under the First Letter Agreement or the Second Letter Agreement.

Section 2. Representations, Warranties and Covenants of the Company. The Company hereby represents, warrants and covenants to the Placement Agent as of the date hereof, and as of each Closing Date, as follows:

(a) Securities Law Filings. The Company has filed with the Securities and Exchange Commission (the “Commission”) the Registration Statement under the Securities Act, which was initially filed on April [●], 2024, and declared effective on [●], 2024 for the registration of the Securities under the Securities Act. Following the determination of pricing among the Company and the prospective Investors introduced to the Company by Placement Agent, the Company will file with the Commission pursuant to Rules 430A and 424(b) under the Securities Act, and the rules and regulations (the “Rules and Regulations”) of the Commission promulgated thereunder, a prospectus relating to the placement of the Securities, their respective pricings and the plan of distribution thereof and will advise the Placement Agent of all further information (financial and other) with respect to the Company required to be set forth therein. Such registration statement, at any given time, including the exhibits thereto filed at such time, as amended at such time, is hereinafter called the “Registration Statement”; such additional registration statement prepared by the Company registering additional Securities, which was filed with the Commission on or prior to the date hereof and became automatically effective pursuant to Rule 462(b) promulgated by the Commission pursuant to the Securities Act, is hereinafter called the “Rule 462(b) Registration Statement”; such prospectus in the form in which it appears in the Registration Statement at the time of effectiveness is hereinafter called the “Preliminary Prospectus”; and the final prospectus, in the form in which it will be filed with the Commission pursuant to Rules 430A and/or 424(b) is hereinafter called the “Final Prospectus.” Any reference in this Agreement to the Registration Statement, the Preliminary Prospectus or the Final Prospectus shall be deemed to refer to and include the documents incorporated by reference therein (the “Incorporated Documents”), if any, which were or are filed under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), at any given time, as the case may be; and any reference in this Agreement to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement, the Preliminary Prospectus or the Final Prospectus shall be deemed to refer to and include the filing of any document under the Exchange Act after the date of this Agreement, or the issue date of the Preliminary Prospectus or the Final Prospectus, as the case may be, deemed to be incorporated therein by reference. All references in this Agreement to financial statements and schedules and other information which is “contained,” “included,” “described,” “referenced,” “set forth” or “stated” in the Registration Statement, the Preliminary Prospectus or the Final Prospectus (and all other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information which is or is deemed to be incorporated by reference in the Registration Statement, the Preliminary Prospectus or the Final Prospectus, as the case may be. As used in this paragraph and elsewhere in this Agreement, “Time of Sale Disclosure Package” means the Preliminary Prospectus, any securities purchase agreement between the Company and the Investors, the final terms of the Offering provided to the Investors (orally or in writing) and any issuer free writing prospectus as defined in Rule 433 of the Act (each, an “Issuer Free Writing Prospectus”), if any, that the parties hereto shall hereafter expressly agree in writing to treat as part of the Time of Sale Disclosure Package. The term “Prospectus” shall mean, as the context requires, the Preliminary Prospectus, the Final Prospectus, and any supplement to either thereof. The Company has not received any notice that the Commission has issued or intends to issue a stop order suspending the effectiveness of the Registration Statement or the use of the Preliminary Prospectus or any prospectus supplement or intends to commence a proceeding for any such purpose.

(b) Assurances. The Registration Statement, as amended, (and any further documents to be filed with the Commission) contains all exhibits and schedules as required by the Securities Act. Each of the Registration Statement and any post-effective amendment thereto, at the time it became effective, complied in all material respects with the Securities Act and the applicable Rules and Regulations and did not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The Preliminary Prospectus, as of the time of sale, and the Final Prospectus, as of its date, compiled or will comply in all material respects with the Securities Act and the applicable Rules and Regulations. The Preliminary Prospectus as of the time of sale did not, and the Final Prospectus, as amended or supplemented, did not and will not contain as of the date thereof any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The Incorporated Documents, when they were filed with the Commission, conformed in all material respects to the requirements of the Exchange Act and the applicable Rules and Regulations promulgated thereunder, and none of such documents, when they were filed with the Commission, contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein (with respect to Incorporated Documents incorporated by reference in the Final Prospectus), in light of the circumstances under which they were made not misleading. No post-effective amendment to the Registration Statement reflecting any facts or events arising after the date thereof which represent, individually or in the aggregate, a fundamental change in the information set forth therein is required to be filed with the Commission. Except for this Agreement and the Transaction Documents, there are no documents required to be filed with the Commission in connection with the transaction contemplated hereby that (x) have not been filed as required pursuant to the Securities Act or (y) will not be filed within the requisite time period. Except for this Agreement and the Transaction Documents, there are no contracts or other documents required to be described in the Preliminary Prospectus or Final Prospectus, or to be filed as exhibits or schedules to the Registration Statement, which have not been described or filed as required.

(c) Offering Materials. Neither the Company nor any of its directors and officers has distributed and none of them will distribute, prior to each Closing Date, any offering material in connection with the offering and sale of the Securities other than the Time of Sale Disclosure Package.

(d) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and the Time of Sale Disclosure Package and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of each of this Agreement by the Company and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Company's Board of Directors (the "Board of Directors") or the Company's stockholders in connection therewith other than in connection with the Required Approvals (as defined in the Purchase Agreement). This Agreement has been duly executed by the Company and, when delivered in accordance with the terms hereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(e) No Conflicts. The execution, delivery and performance by the Company of this Agreement and the transactions contemplated pursuant to the Time of Sale Disclosure Package, the issuance and sale of the Securities and the consummation by it of the transactions contemplated hereby and thereby to which it is a party do not and will not (i) conflict with or violate any provision of the Company's or any Subsidiary's certificate or articles of incorporation, bylaws or other organizational or charter documents, or (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any Lien upon any of the properties or assets of the Company or any Subsidiary, or give to others any rights of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) subject to the Required Approvals, conflict with or result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as could not have or reasonably be expected to result in a Material Adverse Effect, as defined in the Securities Purchase Agreement.

(f) Certificates. Any certificate signed by an officer of the Company and delivered to the Placement Agent or to counsel for the Placement Agent shall be deemed to be a representation and warranty by the Company to the Placement Agent as to the matters set forth therein.

(g) Reliance. The Company acknowledges that the Placement Agent will rely upon the accuracy and truthfulness of the foregoing representations and warranties and hereby consents to such reliance.

(h) Forward-Looking Statements. No forward-looking statements (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) contained in the Time of Sale Disclosure Package has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(i) Statistical or Market-Related Data. Any statistical, industry-related and market-related data included or incorporated by reference in the Time of Sale Disclosure Package, are based on or derived from sources that the Company reasonably and in good faith believes to be reliable and accurate, and such data agree with the sources from which they are derived.

(j) Certain Fees; FINRA Affiliations. Except as set forth in the Registration Statement and Final Prospectus, no brokerage or finder's fees or commissions are or will be payable by the Company, any Subsidiary or Affiliate of the Company to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other Person with respect to the transactions contemplated by the Transaction Documents. There are no other arrangements, agreements or understandings of the Company or, to the Company's knowledge, any of its stockholders that may affect the Placement Agent's compensation, as determined by FINRA. Other than as provided in the First Letter Agreement and the Second Letter Agreement, payments to the Placement Agent for this Offering or as set forth in the Registration Statement and Prospectus, the Company has not made and has no agreements, arrangements or understanding to make any direct or indirect payments (in cash, securities or otherwise) to: (i) any person, as a finder's fee, consulting fee or otherwise, in consideration of such person raising capital for the Company or introducing to the Company persons who raised or provided capital to the Company; (ii) any FINRA member participating in the offering as defined in FINRA Rule 5110 (a "Participating Member"); or (iii) any person or entity that has any direct or indirect affiliation or association with any Participating Member, within the 180-day period preceding the initial filing of the Registration Statement through the 60-day period after the Effective Date of the Registration Statement (the "Effective Date"). None of the net proceeds of the Offering will be paid by the Company to any Participating Member or its affiliates, except as specifically authorized herein. To the Company's knowledge, no officer, director or any beneficial owner of 10% or more of the Company's Common Stock or Common Stock Equivalents (as defined in the Securities Purchase Agreement) has any direct or indirect affiliation or association with any Participating Member in the Offering. Except for securities purchased on the open market, no Company Affiliate is an owner of stock or other securities of any Participating Member. No Company Affiliate has made a subordinated loan to any Participating Member. No proceeds from the sale of the Securities (excluding Placement Agent compensation as disclosed in the Registration Statement and the Prospectus) will be paid to any Participating Member, any persons associated with a Participating Member or an affiliate of a Participating Member. Except as disclosed in the Prospectus, the Company has not issued any warrants or other securities or granted any options, directly or indirectly, to the Placement Agent within the 180-day period prior to the initial filing date of the Prospectus. To the Company's knowledge, except for securities issued to the Placement Agent as disclosed in the Prospectus, no person to whom securities of the Company have been privately issued within the 180-day period prior to the initial filing date of the Prospectus is a Participating Member, is a person associated with a Participating Member or is an affiliate of a Participating Member. To the Company's knowledge, no Participating Member in the Offering has a conflict of interest with the Company. For this purpose, a "conflict of interest" exists when a Participating Member, the parent or affiliate of a Participating Member or any person associated with a Participating Member in the aggregate beneficially own 10% or more of the Company's outstanding subordinated debt or common equity, or 10% or more of the Company's preferred equity. "FINRA member participating in the Offering" includes any associated person of a Participating Member in the Offering, any member of such associated person's immediate family and any affiliate of a Participating Member in the Offering. When used in this Section 3.1(j) the term "affiliate of a FINRA member" or "affiliated with a FINRA member" means an entity that controls, is controlled by or is under common control with a FINRA member. The Company will advise the Placement Agent and its legal counsel, Thompson Hine LLP (the "Placement Agent Counsel") if it learns that any officer, director or owner of 10% or more of the Company's outstanding Common Stock or Common Stock Equivalents is or becomes an affiliate or associated person of a Participating Member.

(k) Board of Directors. The Board of Directors is comprised of the persons set forth in the Registration Statement. The qualifications of the persons serving as board members and the overall composition of the Board of Directors comply with the Sarbanes-Oxley Act of 2002 and the rules promulgated thereunder applicable to the Company and the rules of the Nasdaq Capital Market (the "Trading Market"). In addition, at least a majority of the persons serving on the Board of Directors qualify as "independent" as defined under the rules of the Trading Market, unless otherwise permissible under the rules of the Trading Market.

(l) D&O Questionnaires. To the Company's knowledge, all information contained in the questionnaires most recently completed by each of the Company's directors and officers is true and correct in all respects and the Company has not become aware of any information which would cause the information disclosed in such questionnaires to become inaccurate and incorrect.

(m) Representations and Warranties Incorporated by Reference. Each of the representations and warranties (together with any related disclosure schedules thereto) made to the Investors in the Purchase Agreement is hereby incorporated herein by reference (as though fully restated herein) and is hereby made to, and in favor of, the Placement Agent.

Section 3. Delivery and Payment. Each Closing shall occur at the offices of the Placement Agent Counsel at 300 Madison Ave, New York, New York 10017 (or at such other place as shall be agreed upon by the Placement Agent and the Company). Subject to the terms and conditions hereof, at each Closing payment of the purchase price for the Securities sold on such Closing Date shall be made by Federal Funds wire transfer, against delivery of such Securities, and such Securities shall be registered in such name or names and shall be in such denominations, as the Placement Agent may request at least one business day before the time of purchase (as defined below).

Deliveries of the documents with respect to the purchase of the Securities, if any, shall be made at the offices of Placement Agent Counsel. All actions taken at a Closing shall be deemed to have occurred simultaneously.

Section 4. Covenants and Agreements of the Company. The Company further covenants and agrees with the Placement Agent as follows:

(a) Registration Statement Matters. The Company will advise the Placement Agent promptly after it receives notice thereof of the time when any amendment to the Registration Statement has been filed or becomes effective or any Prospectus has been filed and will furnish the Placement Agent with copies thereof. The Company will file promptly all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Section 13(a), 14 or 15(d) of the Exchange Act subsequent to the date of any prospectus supplement and for so long as the delivery of a prospectus is required in connection with the Offering. The Company will advise the Placement Agent, promptly after it receives notice thereof (i) of any request by the Commission to amend the Registration Statement or to amend or supplement any prospectus or for additional information, (ii) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto or any order directed at any Incorporated Document, if any, or any amendment or supplement thereto or any order preventing or suspending the use of the Preliminary Prospectus, Final Prospectus or any other prospectus supplement or any amendment or supplement thereto or any post-effective amendment to the Registration Statement, of the suspension of the qualification of the Securities for offering or sale in any jurisdiction, of the institution or threatened institution of any proceeding for any such purpose, or of any request by the Commission for the amending or supplementing of the Registration Statement or a prospectus or for additional information, (iii) of the issuance by any state securities commission of any proceedings for the suspension of the qualification of the Securities for offering or sale in any jurisdiction or of the initiation, or the threatening, of any proceeding for that purpose; (iv) of the mailing and delivery to the Commission for filing of any amendment or supplement to the Registration Statement or Prospectus; (v) of the receipt of any comments or request for any additional information from the Commission; and (vi) of the happening of any event during the period described in this Section 4(a) that, in the judgment of the Company, makes any statement of a material fact made in the Registration Statement, Preliminary Prospectus or the Final Prospectus untrue or that requires the making of any changes in the Registration Statement, Preliminary Prospectus or the Final Prospectus in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The Company shall use its best efforts to prevent the issuance of any such stop order or prevention or suspension of such use. If the Commission shall enter any such stop order or order or notice of prevention or suspension at any time, the Company will use its best efforts to obtain the lifting of such order at the earliest possible moment, or will file a new registration statement and use its best efforts to have such new registration statement declared effective as soon as practicable. Additionally, the Company agrees that it shall comply with the provisions of Rules 424(b), 430A, 430B and 430C, as applicable, under the Securities Act, including with respect to the timely filing of documents thereunder, and will use its reasonable efforts to confirm that any filings made by the Company under such Rule 424(b) are received in a timely manner by the Commission.

(b) Blue Sky Compliance. The Company will cooperate with the Placement Agent and the Investors in endeavoring to qualify the Securities for sale under the securities laws of such jurisdictions (United States and foreign) as the Placement Agent and the Investors may reasonably request and will make such applications, file such documents, and furnish such information as may be reasonably required for that purpose, provided the Company shall not be required to qualify as a foreign corporation or to file a general consent to service of process in any jurisdiction where it is not now so qualified or required to file such a consent, and provided further that the Company shall not be required to produce any new disclosure document. The Company will, from time to time, prepare and file such statements, reports and other documents as are or may be required to continue such qualifications in effect for so long a period as the Placement Agent may reasonably request for distribution of the Securities. The Company will advise the Placement Agent promptly of the suspension of the qualification or registration of (or any such exemption relating to) the Securities for offering, sale or trading in any jurisdiction or any initiation or threat of any proceeding for any such purpose, and in the event of the issuance of any order suspending such qualification, registration or exemption, the Company shall use its best efforts to obtain the withdrawal thereof at the earliest possible moment.

(c) Amendments and Supplements to a Prospectus and Other Matters. The Company will comply with the Securities Act and the Exchange Act, and the rules and regulations of the Commission thereunder, so as to permit the completion of the distribution of the Securities as contemplated in this Agreement and any Prospectus. If during the period in which a prospectus is required by law to be delivered in connection with the distribution of Securities contemplated by the Registration Statement or any Prospectus (the "Prospectus Delivery Period"), any event shall occur as a result of which, in the judgment of the Company or in the opinion of the Placement Agent or counsel for the Placement Agent, it becomes necessary to amend or supplement the Registration Statement, Incorporated Documents or any Prospectus in order to make the statements therein, in the light of the circumstances under which they were made, as the case may be, not misleading, or if it is necessary at any time to amend or supplement the Registration Statement, Incorporated Documents or any Prospectus or to file under the Exchange Act any Incorporated Document to comply with any law, the Company will promptly prepare and file with the Commission, and furnish at its own expense to the Placement Agent and to dealers, an appropriate amendment to the Registration Statement or supplement to the Registration Statement, the Incorporated Documents or any Prospectus that is necessary in order to make the statements in the Incorporated Documents and any Prospectus as so amended or supplemented, in the light of the circumstances under which they were made, as the case may be, not misleading, or so that the Registration Statement, the Incorporated Documents or any Prospectus, as so amended or supplemented, will comply with law. Before amending the Registration Statement or supplementing the Incorporated Documents or any Prospectus in connection with the Offering, the Company will furnish the Placement Agent with a copy of such proposed amendment or supplement and will not file any such amendment or supplement to which the Placement Agent reasonably objects within two (2) Business Days, provided that the Company may file any document or report reasonably determined by the Company to be required to be filed by the Company pursuant to the Securities Act or the Exchange Act or the rules and regulations promulgated thereunder within the time periods required for such filings, irrespective of any such objection of the Placement Agent.

(d) Copies of any Amendments and Supplements to a Prospectus. The Company will furnish the Placement Agent, without charge, during the period beginning on the date hereof and ending on the later of the last Closing Date of the Offering, as many copies of any Prospectus or prospectus supplement and any amendments and supplements thereto, as the Placement Agent may reasonably request.

(e) Free Writing Prospectus. The Company covenants that it will not, unless it obtains the prior written consent of the Placement Agent, make any offer relating to the Securities that would constitute a Company Free Writing Prospectus or that would otherwise constitute a "free writing prospectus" (as defined in Rule 405 of the Securities Act) required to be filed by the Company with the Commission or retained by the Company under Rule 433 of the Securities Act. In the event that the Placement Agent expressly consents in writing to any such free writing prospectus (a "Permitted Free Writing Prospectus"), the Company covenants that it shall (i) treat each Permitted Free Writing Prospectus as a Company Free Writing Prospectus, and (ii) comply with the requirements of Rule 164 and 433 of the Securities Act applicable to such Permitted Free Writing Prospectus, including in respect of timely filing with the Commission, legending and record keeping.

(f) Transfer Agent. The Company will maintain, at its expense, a registrar and transfer agent for the Shares.

(g) Periodic Reporting Obligations. During the Prospectus Delivery Period, the Company will duly file, on a timely basis, with the Commission and the Trading Market all reports and documents required to be filed under the Exchange Act within the time periods and in the manner required by the Exchange Act.

(h) Additional Documents. The Company will enter into any subscription, purchase or other customary agreements as the Placement Agent or the Investors deem necessary or appropriate to consummate the Offering, all of which will be in form and substance reasonably acceptable to the Placement Agent and the Investors. The Company agrees that the Placement Agent may rely upon, and each is a third party beneficiary of, the representations and warranties, and applicable covenants, set forth in any such purchase, subscription or other agreement with Investors in the Offering.

(i) No Manipulation of Price. Neither the Company, nor to its knowledge, any of its employees, directors or stockholders, has taken or will take, directly or indirectly, any action designed to or that has constituted or that might reasonably be expected to cause or result in, under the Exchange Act, or otherwise stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

(j) Acknowledgment. The Company acknowledges that any advice given by the Placement Agent to the Company is solely for the benefit and use of the Board of Directors of the Company and may not be used, reproduced, disseminated, quoted or referred to, without the Placement Agent's prior written consent.

(k) Announcement of Offering. The Company acknowledges and agrees that the Placement Agent may, subsequent to the Closing, make public its involvement with the Offering.

(l) Reliance on Others. The Company confirms that it will rely on its own counsel and accountants for legal and accounting advice.

(m) Research Matters. By entering into this Agreement, the Placement Agent does not provide any promise, either explicitly or implicitly, of favorable or continued research coverage of the Company and the Company hereby acknowledges and agrees that the Placement Agent's selection as a placement agent for the Offering was in no way conditioned, explicitly or implicitly, on the Placement Agent providing favorable or any research coverage of the Company. In accordance with FINRA Rule 2241(b)(2), the parties acknowledge and agree that the Placement Agent has not directly or indirectly offered favorable research, a specific rating or a specific price target, or threatened to change research, a rating or a price target, to the Company or inducement for the receipt of business or compensation. The Company hereby waives and releases, to the fullest extent permitted by law, any claims that the Company may have against the Placement Agent with respect to any conflict of interest that may arise from the fact that the views expressed by their independent research analysts and research departments may be different from or inconsistent with the views or advice communicated to the Company by the Placement Agent's investment banking divisions. The Company acknowledges that the Placement Agent is a full service securities firm and as such from time to time, subject to applicable securities laws, may effect transactions for its own account or the account of its customers and hold long or short position in debt or equity securities of the Company.

(n) Subsequent Equity Sales.

(i) From the date hereof until ninety (90) days after the earlier of (i) a Closing Date and (ii) May 31, 2024, neither the Company nor any Subsidiary shall (i) issue, enter into any agreement to issue or announce the issuance or proposed issuance of any Common Stock or Common Stock Equivalents; or (ii) file any registration statement or amendment or supplement thereto, other than (a) the Prospectus or filing a registration statement on Form S-8 in connection with any employee benefit plan, (b) a post-effective amendment to the Company's registration statement on Form S-1 (File No. 333-275361), and (c) a registration statement on Form S-1, or any amendment or supplement thereto, in connection with the transactions contemplated by that certain share purchase agreement between the Company, GEM Global Yield LLC SCS and GEM Yield Bahamas Limited, dated as of November 12, 2021 (the "GEM Agreement"), in each case without prior written consent of the Placement Agent *provided, however*, that the Company shall not file publicly a registration statement on Form S-1 related to the GEM Agreement until thirty (30) days after the earlier of (i) a Closing Date and (ii) May 31, 2024.

(ii) Notwithstanding the foregoing, this Section 4(n), other than the prohibition on filing publicly a registration statement on Form S-1 related to the GEM Agreement until thirty (30) days after the earlier of (i) a Closing Date and (ii) May 31, 2024, shall not apply in respect of an Exempt Issuance, except that no Variable Rate Transaction (other than issuances pursuant to the GEM Agreement, which are Exempt Issuances) shall be an Exempt Issuance. A "Variable Rate Transaction" means a transaction in which the Company (i) issues or sells any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive additional shares of Common Stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon and/or varies with the trading prices of or quotations for the shares of Common Stock at any time after the initial issuance of such debt or equity securities, or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock or (ii) enters into, or effects a transaction under, any agreement, including, but not limited to, an equity line of credit or an "at-the-market offering", whereby the Company may issue securities at a future determined price. An "Exempt Issuance" means the issuance of (a) Common Stock or equity awards (including the Common Stock underlying such equity awards) to employees, consultants, officers or directors of the Company pursuant to any stock or option plan duly adopted for such purpose, by a majority of the non-employee members of the Board of Directors or a majority of the members of a committee of non-employee directors established for such purpose for services rendered to the Company, (b) securities upon the exercise or exchange of or conversion of any Securities issued hereunder and/or other securities exercisable or exchangeable for or convertible into Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of this Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits, adjustments or combinations as set forth in such securities) or to extend the term of such securities (except for any such amendment triggered by the Offering), (c) securities issued pursuant to acquisitions or strategic transactions approved by a majority of the disinterested directors of the Company, provided that such securities are issued as "restricted securities" (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith during the three month period following the Closing Date, and provided that any such issuance shall only be to a Person (or to the equityholders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities, (d) securities in accordance with the GEM Agreement, provided the GEM Agreement has not been amended since the date of this Agreement, except as permitted by the Placement Agent, and (e) issuance of securities in connection with strategic alliances, collaborations and licensing transactions approved by a majority of the non-employee members of the Board of Directors, and (f) the issuance of the Securities in the Offering or the filing of any registration statement or amendment or supplement thereto in connection with the Offering.

(o) Lock-Up Agreements. The Company shall not amend, modify, waive or terminate any provision of any of the Lock-Up Agreements except to extend the term of the lock-up period and shall enforce the provisions of each Lock-Up Agreement in accordance with its terms. If any party to a Lock-Up Agreement breaches any provision of a Lock-Up Agreement, the Company shall promptly use its best efforts to seek specific performance of the terms of such Lock-Up Agreement.

(p) FINRA. The Company shall advise the Placement Agent (who shall make an appropriate filing with FINRA) if it is aware that any officer, director, 10% or greater stockholder of the Company or Person that received the Company's unregistered equity securities in the past 180 days is or becomes an affiliate or associated person of a FINRA member firm prior to the earlier of the termination of this Agreement or the 60-day period after the Effective Date

Section 5. Conditions of the Obligations of the Placement Agent. The obligations of the Placement Agent hereunder shall be subject to the accuracy of the representations and warranties on the part of the Company set forth in Section 2 hereof, in each case as of the date hereof and as of each Closing Date as though then made, to the timely performance by each of the Company of its covenants and other obligations hereunder on and as of such dates, and to each of the following additional conditions:

(a) Accountants' Comfort Letters. On the date of this Agreement, the Placement Agent shall have received, and the Company shall have caused to be delivered to the Placement Agent, a "cold comfort" letter from WithumSmith+Brown, P.C. (the current independent registered public accounting firm of the Company), addressed to the Placement Agent, dated as of the date hereof, in form and substance satisfactory to the Placement Agent and on the Closing Date, the Placement Agent shall have received a bring-down "cold comfort" letter dated as of the Closing Date. The letter shall not disclose any change in the condition (financial or other), earnings, operations, business or prospects of the Company from that set forth in the Registration Statement or the applicable Prospectus or prospectus supplement, which, in the Placement Agent's sole judgment, is material and adverse and that makes it, in the Placement Agent's sole judgment, impracticable or inadvisable to proceed with the Offering of the Securities as contemplated by such Prospectus.

(b) Compliance with Registration Requirements; No Stop Order; No Objection from the FINRA. Each Prospectus (in accordance with Rule 424(b)) and "free writing prospectus" (as defined in Rule 405 of the Securities Act), if any, shall have been duly filed with the Commission, as appropriate; no stop order suspending the effectiveness of the Registration Statement or any part thereof shall have been issued and no proceeding for that purpose shall have been initiated or threatened by the Commission; no order preventing or suspending the use of any Prospectus shall have been issued and no proceeding for that purpose shall have been initiated or threatened by the Commission; no order having the effect of ceasing or suspending the distribution of the Securities or any other securities of the Company shall have been issued by any securities commission, securities regulatory authority or stock exchange and no proceedings for that purpose shall have been instituted or shall be pending or, to the knowledge of the Company, contemplated by any securities commission, securities regulatory authority or stock exchange; all requests for additional information on the part of the Commission shall have been complied with; and FINRA shall have raised no objection to the fairness and reasonableness of the placement terms and arrangements.

(c) Corporate Proceedings. All corporate proceedings and other legal matters in connection with this Agreement, the Registration Statement and each Prospectus, and the registration, sale and delivery of the Securities, shall have been completed or resolved in a manner reasonably satisfactory to the Placement Agent's counsel, and such counsel shall have been furnished with such papers and information as it may reasonably have requested to enable such counsel to pass upon the matters referred to in this Section 5.

(d) No Material Adverse Change. Subsequent to the execution and delivery of this Agreement and prior to each Closing Date, in the Placement Agent's sole judgment after consultation with the Company, there shall not have occurred any Material Adverse Effect or any material adverse change or development involving a prospective material adverse change in the condition or the business activities, financial or otherwise, of the Company from the latest dates as of which such condition is set forth in the Registration Statement and Prospectus ("Material Adverse Change").

(e) Opinion of Counsel for the Company. The Placement Agent shall have received on each Closing Date the favorable opinion of Norton Rose Fulbright Rose US LLP, counsel to the Company, dated as of such Closing Date, including, without limitation, a negative assurance letter addressed to the Placement Agent and in form and substance satisfactory to the Placement Agent.

(f) Officers' Certificate. The Placement Agent shall have received on each Closing Date a certificate of the Company, dated as of such Closing Date, signed by the Chief Executive Officer and Chief Financial Officer of the Company, to the effect that, and the Placement Agent shall be satisfied that, the signers of such certificate have reviewed the Registration Statement, the Incorporated Documents, if any, the Prospectus, and this Agreement and to the further effect that:

(i) The representations and warranties of the Company in this Agreement are true and correct, as if made on and as of such Closing Date, and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to such Closing Date;

(ii) No stop order suspending the effectiveness of the Registration Statement or the use of the Prospectus has been issued and no proceedings for that purpose have been instituted or are pending or, to the Company's knowledge, threatened under the Securities Act; no order having the effect of ceasing or suspending the distribution of the Securities or any other securities of the Company has been issued by any securities commission, securities regulatory authority or stock exchange in the United States and no proceedings for that purpose have been instituted or are pending or, to the knowledge of the Company, contemplated by any securities commission, securities regulatory authority or stock exchange in the United States;

(iii) When the Registration Statement became effective, at the time of sale, and at all times subsequent thereto up to the delivery of such certificate, the Registration Statement and any Prospectus, contained all material information required to be included therein by the Securities Act and the Exchange Act and the applicable rules and regulations of the Commission thereunder, as the case may be, and in all material respects conformed to the requirements of the Securities Act and the Exchange Act and the applicable rules and regulations of the Commission thereunder, as the case may be, and the Registration Statement and any Prospectus, did not and do not include any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading (*provided, however*, that the preceding representations and warranties contained in this paragraph (iii) shall not apply to any statements or omissions made in reliance upon and in conformity with information furnished in writing to the Company by the Placement Agent expressly for use therein) and, since the Effective Date, there has occurred no event required by the Securities Act and the rules and regulations of the Commission thereunder to be set forth in the Prospectus which has not been so set forth; and

(iv) Subsequent to the respective dates as of which information is given in the Registration Statement and any Prospectus, there has not been: (a) any Material Adverse Change; (b) any transaction that is material to the Company and the Subsidiaries taken as a whole, except transactions entered into in the ordinary course of business; (c) any obligation, direct or contingent, that is material to the Company and the Subsidiaries taken as a whole, incurred by the Company or any Subsidiary, except obligations incurred in the ordinary course of business; (d) any material change in the capital stock (except changes thereto resulting from the exercise of outstanding stock options or warrants or conversion of outstanding preferred stock) or outstanding indebtedness of the Company or any Subsidiary; (e) any dividend or distribution of any kind declared, paid or made on the capital stock of the Company; or (f) any loss or damage (whether or not insured) to the property of the Company or any Subsidiary which has been sustained or will have been sustained which has a Material Adverse Effect.

(g) Stock Exchange Listing. The Common Stock shall be registered under the Exchange Act and shall be listed on the Trading Market, and the Company shall not have taken any action designed to terminate, or likely to have the effect of terminating, the registration of the Common Stock under the Exchange Act or delisting or suspending from trading the Common Stock from the Trading Market, nor shall the Company have received any information suggesting that the Commission or the Trading Market is contemplating terminating such registration or listing.

(h) Lock-Up Agreements. On the Closing Date, the Placement Agent shall have received the executed lock-up agreement from each of the Company's directors and executive officers.

(i) Additional Documents. On or before each Closing Date, the Placement Agent and counsel for the Placement Agent shall have received such information and documents as they may reasonably require for the purposes of enabling them to pass upon the issuance and sale of the Securities as contemplated herein, or in order to evidence the accuracy of any of the representations and warranties, or the satisfaction of any of the conditions or agreements, herein contained.

If any condition specified in this Section 5 is not satisfied when and as required to be satisfied, this Agreement may be terminated by the Placement Agent by notice to the Company at any time on or prior to a Closing Date, which termination shall be without liability on the part of any party to any other party, except that Section 6 (Payment of Expenses), Section 7 (Indemnification and Contribution) and Section 8 (Representations and Indemnities to Survive Delivery) shall at all times be effective and shall survive such termination.

Section 6. Payment of Expenses. The Company agrees to pay all costs, fees and expenses incurred by the Company in connection with the performance of its obligations hereunder and in connection with the transactions contemplated hereby, including, without limitation: (i) all expenses incident to the issuance, delivery and qualification of the Securities (including all printing and engraving costs); (ii) all fees and expenses of the registrar and transfer agent of the Common Stock; (iii) all necessary issue, transfer and other stamp taxes in connection with the issuance and sale of the Securities; (iv) all fees and expenses of the Company's counsel, independent public or certified public accountants and other advisors; (v) all costs and expenses incurred in connection with the preparation, printing, filing, shipping and distribution of the Registration Statement (including financial statements, exhibits, schedules, consents and certificates of experts), Prospectus, and each prospectus supplement, and all amendments and supplements thereto, and this Agreement; (vi) all filing fees, reasonable attorneys' fees and expenses incurred by the Company or the Placement Agent in connection with qualifying or registering (or obtaining exemptions from the qualification or registration of) all or any part of the Securities for offer and sale under the state securities or blue sky laws or the securities laws of any other country, and, if requested by the Placement Agent, preparing and printing a "Blue Sky Survey," an "International Blue Sky Survey," or other memorandum, and any supplements thereto, advising the Placement Agent of such qualifications, registrations and exemptions; (vii) if applicable, the filing fees incident to the review and approval by FINRA of the Placement Agent's participation in the offering and distribution of the Securities; (viii) the fees and expenses associated with including the Shares and Warrant Shares on the Trading Market; (ix) all costs and expenses incident to the travel and accommodation of the Company's and the Placement Agent's employees on the "roadshow," if any; and (x) all other fees, costs and expenses referred to in Part II of the Registration Statement.

Section 7. Indemnification and Contribution.

(a) The Company (the "Indemnitor") agrees to indemnify and hold harmless the Placement Agent and its affiliates, and the respective officers, directors, employees, agents and representatives of the Placement Agent, its affiliates and each other person, if any, controlling the Placement Agent or any of its affiliates (the Placement Agent and each such other person being an "Indemnified Person") from and against any losses, claims, damages or liabilities related to, arising out of or in connection with the engagement (the "Engagement") under the Agreement, and will reimburse each Indemnified Person for all expenses (including fees and expenses of counsel) as they are incurred in connection with investigating, preparing, pursuing or defending any action, claim, suit, investigation or proceeding related to, arising out of or in connection with the Engagement, whether or not pending or threatened and whether or not any Indemnified Person is a party. The Indemnitor will not, however, be responsible for any losses, claims, damages or liabilities (or expenses relating thereto) that are judicially determined in a judgment not subject to appeal to have resulted from any Indemnified Person(s): (x) gross negligence or willful misconduct in connection with any of the advice, actions, inactions or services referred to in this Agreement or (y) use of any offering materials or information concerning the Company in connection with the offer or sale of the Securities in the Offering which were not authorized for such use by the Company.

(b) The Indemnitor will not, without the Placement Agent's prior written consent, which written consent shall not be unreasonably withheld, settle, compromise, consent to the entry of any judgment in or otherwise seek to terminate any action, claim, suit or proceeding in respect of which indemnification may be sought hereunder (whether or not any Indemnified Person is a party thereto) unless such settlement, compromise, consent or termination includes a release of each Indemnified Person from any liabilities arising out of such action, claim, suit or proceeding. No Indemnified Person seeking indemnification, reimbursement or contribution under this agreement will, without the prior written consent of the Indemnitor, settle, compromise, consent to the entry of any judgment in or otherwise seek to terminate any action, claim, suit, investigation or proceeding referred to in the preceding paragraph.

(c) If the indemnification provided for in subsection (a) is judicially determined to be unavailable (other than in accordance with the second sentence of the first paragraph hereof) to an Indemnified Person in respect of any losses, claims, damages or liabilities referred to herein, then, in lieu of indemnifying such Indemnified Person hereunder, the Indemnitor shall contribute to the amount paid or payable by such Indemnified Person as a result of such losses, claims, damages or liabilities (and expense relating thereto): (i) in such proportion as is appropriate to reflect the relative benefits to the applicable Indemnified Person, on the one hand, and the Indemnitor, on the other hand, of the Engagement or (ii) if the allocation provided by clause (i) above is not available, in such proportion as is appropriate to reflect not only the relative benefits referred to in such clause (i) but also the relative fault of each of the applicable Indemnified Person and the Indemnitor, as well as any other relevant equitable considerations; *provided, however*, that in no event shall any Indemnified Person's aggregate contribution to the amount paid or payable exceed the aggregate amount of fees actually received by the Placement Agent under the Agreement. Assuming that the Indemnitor has fully satisfied the amount of their obligations provided for herein to the Indemnified Persons, and the Indemnified Persons shall have no further liabilities in connection therewith, then the Indemnitor may take control of any pending action or litigation in order to reduce the expenses in connection therewith. For the purposes of this Section, the relative benefits to the Indemnitor and the applicable Indemnified Person of the Engagement shall be deemed to be in the same proportion as: (a) the total value paid or contemplated to be paid or received or contemplated to be received by the Indemnitor and its affiliates (including the Company's stockholders), as the case may be, in the transaction or transactions that are the subject of the Engagement, whether or not any such transaction is consummated, bears to (b) the fees paid to the Placement Agent in connection with the Engagement.

(d) Upon obtaining knowledge of any claim which may give rise to indemnification not involving a Third Party Claim (as defined below), the Indemnified Person shall, as promptly as practicable following the date the Indemnified Person has obtained such knowledge, give written notice (which may be delivered by facsimile transmission, with confirmation of receipt by the receiving party) of such claim for which indemnification is sought (each, a "Claim") to the Indemnitor, but no failure to give such notice shall relieve the Indemnitor of any liability hereunder (except to the extent that the Indemnitor has suffered actual, irreversible and material economic prejudice thereby). The Indemnified Person, at its cost, shall furnish to the Indemnitor in good faith and in reasonable detail such information as the Indemnified Person may have with respect to such Claim.

(e) Promptly after receipt by an Indemnified Person of notice of the commencement of any action, suit or proceeding involving a Claim by a third party (each, a “Third Party Claim”) against it, such Indemnified Person will give written notice to the Indemnitor of the commencement of such Third Party Claim, and shall give the Indemnitor such information with respect thereto as the Indemnitor may reasonably request, but no failure to give such notice shall relieve the Indemnitor of any liability hereunder (except to the extent the Indemnitor have suffered actual, irreversible and material economic prejudice thereby). The Indemnitor shall have the right, but not the obligation, to assume the defense and control the settlement of such Third Party Claim, at their cost and expense (and not as a reduction in the amount of indemnification available hereunder), using counsel selected by the Indemnitor and reasonably acceptable to the Indemnified Person. If the Indemnitor satisfies the requirements of this Section and desires to assume the defense and control the settlement of such Third Party Claim, the Indemnitor shall give written notice (the “Notice”) to the Indemnified Person within fourteen (14) calendar days of receipt of notice from the Indemnified Person of the commencement of or assertion of any Third Party Claim stating that the Indemnitor shall be responsible for such Third Party Claim. Notwithstanding the foregoing, the Indemnified Person shall have the right: (i) to assume the defense and control the settlement of a Third Party Claim and (ii) to employ separate counsel at its reasonable expense (provided that the Indemnitor shall not be required to reimburse the expenses and costs of more than one law firm) and control its own defense of a Third Party Claim if (x) the named parties to any such action (including any impleaded parties) include both the Indemnified Person and us, and the Indemnified Person shall have been advised by counsel that there are one or more legal or equitable defenses available to the Indemnified Person that are different from those available to the Indemnitor, (y) such Third Party Claim involves equitable or other non-monetary damages or in the reasonable judgment of the Indemnified Person, such settlement would have a continuing material adverse effect on the Indemnified Person’s business (including any material impairment of its relationships with customers and suppliers) or (z) or in the reasonable judgment of the Indemnified Person, the Indemnitor may not be able to satisfy fully such Third Party Claim. In addition, if the Indemnitor fails to give the Indemnified Person the Notice in accordance with the terms hereof, the Indemnified Person shall have the right to assume control of the defense of and settle the Third-Party Claim and all costs incurred in connection therewith shall constitute damages of the Indemnified Person. For the avoidance of doubt, the Indemnitor acknowledges that it will advance any retainer fees required by legal counsel to an Indemnified Person simultaneously with the engagement by such Indemnified Person of such counsel, it being understood and agreed that the amount of such retainer shall not exceed \$20,000 and that such retainer shall be credited to fees incurred with the balance (if any) refundable to the Indemnitor.

(f) If at any time after the Indemnitor assumes the defense of a Third-Party Claim, any of the conditions set forth in the paragraph above are no longer satisfied, the Indemnified Person shall have the same rights as set forth above as if the Indemnitor never assumed the defense of such claim.

(g) Notwithstanding the foregoing, the Indemnitor or the Indemnified Person, as the case may be, shall have the right to participate, at the Indemnitor’s or the Indemnified Person’s own expense, in the defense of any Third-Party Claim that the other party is defending.

(h) If the Indemnitor assumes the defense of any Third Party Claim in accordance with the terms hereof, the Indemnitor shall have the right, upon 30 calendar days’ prior written notice to the Indemnified Person, to consent to the entry of judgment with respect to, or otherwise settle such Third Party Claim; *provided, however*, that with respect to such consent to the entry of judgment or settlement, the Indemnified Person will not have any liability and will be fully indemnified with respect to all Third Party Claims. Notwithstanding the foregoing, the Indemnitor shall not have the right to consent to the entry of judgment with respect to, or otherwise settle a Third Party Claim if: (i) the consent to judgment or settlement of such Third Party Claim involves equitable or other non-monetary damages against the Indemnified Person, or (ii) in the reasonable judgment of the Indemnified Person, such settlement would have a continuing effect on the Indemnified Person’s business (including any material impairment of its relationships with customers and suppliers), without the prior written consent of the Indemnified Person. In addition, the Indemnified Person shall have the sole and exclusive right to settle any Third Party Claim on such terms and conditions as it deems reasonably appropriate, (x) if the Indemnitor fails to assume the defense in accordance with the terms hereof, or (y) to the extent such Third Party Claim involves only equitable or other non-monetary relief, and shall have the right to settle any Third Party Claim involving monetary damages with our consent, which consent shall not be unreasonably withheld.

Section 8. Representations and Indemnities to Survive Delivery. The respective indemnities, agreements, representations, warranties and other statements of the Company or any person controlling the Company, of its officers, and of the Placement Agent set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by or on behalf of the Placement Agent, the Company, or any of its or their partners, officers or directors or any controlling person, as the case may be, and will survive delivery of and payment for the Securities sold hereunder and any termination of this Agreement. A successor to a Placement Agent, or to the Company, its directors or officers or any person controlling the Company, shall be entitled to the benefits of the indemnity, contribution and reimbursement agreements contained in this Agreement.

Section 9. Notices. All communications hereunder shall be in writing and effective only upon receipt, and shall be mailed, hand delivered, e-mailed or telecopied and confirmed to the parties hereto as follows:

If to the Placement Agent to the address set forth above, attention: [●], email: [●]@maximgrp.com

With a copy to:

Thompson Hine LLP
300 Madison Ave, 27th Floor
New York, New York 10012
E-mail: faith.charles@thompsonhine.com
Attention: Faith Charles

If to the Company:
FibroBiologics, Inc.
455 E. Medical Center Blvd., Suite 300
Houston, Texas 77598
E-mail: contracts@fibrobiologics.com
Attention: Legal Department

With a copy to:

Norton Rose Fulbright US LLP
1301 McKinney, Suite 5100
Houston, Texas 77010-3095
E-mail: brian.fenske@nortonrosefulbright.com
Attention: Brian P. Fenske

Any party hereto may change the address for receipt of communications by giving written notice to the others.

Section 10. Successors. This Agreement will inure to the benefit of and be binding upon the parties hereto, and to the benefit of the employees, officers and directors and controlling persons referred to in Section 7 hereof, and to their respective successors, and personal representative, and no other person will have any right or obligation hereunder.

Section 11. Partial Unenforceability. The invalidity or unenforceability of any section, paragraph or provision of this Agreement shall not affect the validity or enforceability of any other section, paragraph or provision hereof. If any Section, paragraph or provision of this Agreement is for any reason determined to be invalid or unenforceable, there shall be deemed to be made such minor changes (and only such minor changes) as are necessary to make it valid and enforceable.

Section 12. Governing Law. This Agreement will be governed by, and construed in accordance with, the laws of the State of New York applicable to agreements made and to be performed entirely in such State, without regard to the conflicts of laws principles thereof. This Agreement may not be assigned by either party without the prior written consent of the other party. Any right to trial by jury with respect to any dispute arising under this Agreement or any transaction or conduct in connection herewith is waived. Any dispute arising under this Agreement may be brought into the courts of the State of New York or into the Federal Court located in New York, New York and, by execution and delivery of this Agreement, the Company hereby accepts for itself and in respect of its property, generally and unconditionally, the jurisdiction of aforesaid courts. Each party hereto hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by delivering a copy thereof via overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law. Each party hereto agrees that a final judgment in any such action, proceeding or counterclaim brought in any such court shall be conclusive and binding upon the other party and may be enforced in any other courts to the jurisdiction of which such party is or may be subject, by suit upon such judgment. If either party to this Agreement shall commence an action or proceeding to enforce any provisions of a Transaction Document, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its attorney's fees and other costs and expenses incurred for the investigation, preparation and prosecution of such action or proceeding.

Section 13. General Provisions.

(a) This Agreement constitutes the entire agreement of the parties to this Agreement and supersedes all prior written or oral and all contemporaneous oral agreements, understandings and negotiations with respect to the subject matter hereof. This Agreement may be executed in two or more counterparts, each one of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument. This Agreement may not be amended or modified unless in writing by all of the parties hereto, and no condition herein (express or implied) may be waived unless waived in writing by each party whom the condition is meant to benefit. Section headings herein are for the convenience of the parties only and shall not affect the construction or interpretation of this Agreement.

(b) The Company acknowledges that in connection with the offering of the Securities: (i) the Placement Agent's responsibility to the Company is solely contractual and commercial in nature, (ii) the Placement Agent has acted at arm's length, are not agents of, and owe no fiduciary duties to the Company or any other person, (iii) the Placement Agent owes the Company only those duties and obligations set forth in this Agreement and (iv) the Placement Agent may have interests that differ from those of the Company. The Company waives to the fullest extent permitted by applicable law any claims it may have against the Placement Agent arising from a breach or alleged breach of fiduciary duty in connection with the offering of the Securities.

[The remainder of this page has been intentionally left blank.]

If the foregoing is in accordance with your understanding of our agreement, please sign below whereupon this instrument, along with all counterparts hereof, shall become a binding agreement in accordance with its terms.

Very truly yours

FIBROBIOLOGICS, INC. a Delaware corporation

By: _____
Name: Pete O'Heeron
Title: Chief Executive Officer

The foregoing Placement Agency Agreement is hereby confirmed and accepted as of the date first above written.

MAXIM GROUP LLC

By: _____
Name: Clifford Teller
Title: Co-President

THIS WARRANT AND THE SECURITIES ISSUABLE UPON EXERCISE OF THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), OR QUALIFIED UNDER ANY STATE OR FOREIGN SECURITIES LAWS AND MAY NOT BE OFFERED FOR SALE, SOLD, PLEDGED, HYPOTHECATED, OR OTHERWISE TRANSFERRED OR ASSIGNED UNLESS (I) A REGISTRATION STATEMENT COVERING SUCH SHARES IS EFFECTIVE UNDER THE ACT AND IS QUALIFIED UNDER APPLICABLE STATE AND FOREIGN LAW OR (II) THE TRANSACTION IS EXEMPT FROM THE REGISTRATION AND PROSPECTUS DELIVERY REQUIREMENTS UNDER THE ACT AND THE QUALIFICATION REQUIREMENTS UNDER APPLICABLE STATE AND FOREIGN LAW AND, IF THE CORPORATION REQUESTS, AN OPINION SATISFACTORY TO THE CORPORATION TO SUCH EFFECT HAS BEEN RENDERED BY COUNSEL.

VOID AFTER 5:00 P.M., EASTERN TIME, **DATE THAT IS THREE YEARS FROM THE EFFECTIVE DATE.**

WARRANT TO PURCHASE COMMON STOCK

FIBROBIOLOGICS, INC.

Warrant Shares: ____

Original Issue Date: ____

1. Purchase Warrant. THIS CERTIFIES THAT, pursuant to that certain Subscription Agreement by and between FibroBiologics, Inc., a Delaware corporation (the "Company") and ____ ("Holder") dated ____ (the "Subscription Agreement"), Holder and its assignees, as registered holders of this purchase warrant ("Purchase Warrant"), is entitled, at any time or from time to time from the Public Listing Date (the "Effective Date"), and at or before 5:00 p.m., Eastern time, on the date that is three years from the Effective Date (the "Expiration Date"), but not thereafter, to subscribe for, purchase and receive, in whole or in part, up to ____ shares of common stock, par value \$0.00001 per share, of the Company ("Common Stock"), subject to adjustment as provided in Section 6 hereof. If the Expiration Date is a day on which banking institutions in New York, New York are authorized by law to close, then this Purchase Warrant may be exercised on the next succeeding day which is not such a day in accordance with the terms herein. During the period ending on the Expiration Date, the Company agrees not to take any action that would terminate this Purchase Warrant. This Purchase Warrant is initially exercisable at \$20.00 per share of Common Stock; *provided, however*, that upon the occurrence of any of the events specified in Section 6 hereof, the rights granted by this Purchase Warrant, including the exercise price per share and the number of shares of Common Stock to be received upon such exercise, shall be adjusted as therein specified. The term "Exercise Price" shall mean the initial exercise price as set forth above or the adjusted exercise price as a result of the events set forth in Section 6 hereof, depending on the context. The term "Public Listing Date" shall mean the first day on which the Common Stock trades on the principal U.S. securities exchange or trading market, including but not limited to any tier of the Nasdaq Stock Market or the NYSE, or any successor to such markets.

Capitalized terms used and not defined herein shall have the meanings ascribed to them in the Subscription Agreement.

2. Exercise.

2.1 Exercise Form. In order to exercise this Purchase Warrant, the notice of exercise form attached hereto as Exhibit A must be duly executed and completed and delivered to the Company, together with this Purchase Warrant and payment of the Exercise Price for the Common Stock being purchased payable in cash by wire transfer of immediately available funds to an account designated by the Company or by certified check. If the purchase rights represented hereby shall not be exercised at or before 5:00 p.m., Eastern time, on the Expiration Date, this Purchase Warrant shall become and be void without further force or effect, and all rights represented hereby shall cease and expire.

2.2 Legend. Each certificate or book-entry for the Common Stock purchased under this Purchase Warrant shall bear a legend or restrictive notation, as applicable, substantially in the following form, unless such Common Stock has been registered under the Securities Act of 1933, as amended (the “Act”), or is exempt from registration under the Act:

“These securities have not been registered under the Securities Act of 1933, as amended (the “Act”), or applicable state law. Neither the securities nor any interest therein may be offered for sale, sold or otherwise transferred except pursuant to an effective registration statement under the Act, or pursuant to an exemption from registration under the Act and applicable state law which, in the opinion of counsel to the Company, is available.”

3. Transfer.

3.1 General Restrictions. Subject to the transfer conditions referred to in the legend endorsed hereon, this Purchase Warrant and all rights hereunder are transferable, in whole or in part, by the Holder without charge to the Holder, upon surrender of this Purchase Warrant to the Company at its then principal executive offices with a properly completed and duly executed assignment form in the form attached hereto as Exhibit B, together with funds sufficient to pay any transfer taxes in connection with the making of such transfer. Upon such compliance, surrender, and delivery and, if required, such payment, the Company shall execute and deliver a new Purchase Warrant or Purchase Warrants in the name of the assignee or assignees and in the denominations specified in such instrument of assignment, and shall issue to the assignor a new Purchase Warrant evidencing the portion of this Purchase Warrant, if any, not so assigned and this Purchase Warrant shall promptly be canceled.

3.2 Restrictions Imposed by the Act. The Common Stock purchased under this Purchase Warrant shall not be transferred unless and until: (i) the Company has received the opinion of counsel for the Company that the securities may be transferred pursuant to an exemption from registration under the Act and applicable state securities laws, the availability of which is established to the reasonable satisfaction of the Company, (ii) a registration statement or a post-effective amendment to a registration statement relating to the offer and sale of such securities has been declared effective by the U.S. Securities and Exchange Commission (the “Commission”) and includes a current prospectus or (iii) a registration statement, pursuant to which the Holder has exercised its registration rights pursuant to Sections 4.1 and 4.2 herein, relating to the offer and sale of such securities has been filed and declared effective by the Commission and compliance with applicable state securities law has been established.

4. Registration Rights.

4.1 Demand Registration.

4.1.1 Grant of Right. The Company, upon written demand (a “Demand Notice”) of the Holders of at least 51% of the Purchase Warrants and/or the underlying Common Stock, agrees to register, on one (1) occasion, all or any portion of the Common Stock underlying the Purchase Warrants (collectively, the “Registrable Securities”). On such occasion, the Company will file a registration statement with the Commission covering the Registrable Securities within sixty (60) days after receipt of a Demand Notice and use its reasonable best efforts to have the registration statement declared effective promptly thereafter, subject to compliance with review by the Commission; provided, however, that the Company shall not be required to comply with a Demand Notice if the Company has, within the ninety (90) days preceding such Demand Notice, filed a registration statement with respect to which the Holder is entitled to piggyback registration rights pursuant to Section 4.2 hereof and either: (i) the Holder has elected to participate in the offering covered by such registration statement or (ii) if such registration statement relates to an underwritten primary offering of securities of the Company, until ninety (90) days after the offering covered by such registration statement has been withdrawn or until ninety (90) days after such offering is consummated. The Company covenants and agrees to give written notice of its receipt of any Demand Notice by any Holders to all other registered Holders of the Purchase Warrants and/or the Registrable Securities within five (5) business days after the date of the receipt of any such Demand Notice and such written notice shall offer each such Holder the opportunity to include in the Demand Registration Statement that number of Registrable Securities as each such Holder may request in writing within five (5) business days after the date that the Company delivered the written notice.

4.1.2 Delay in Filing; Suspension of Registration. If the filing, initial effectiveness or continued use of a registration statement effected pursuant to a Demand Notice (a “Demand Notice Registration Statement”) at any time would require the Company to make an Adverse Disclosure (as defined below), the Company may, upon giving prompt written notice of such action to the affected Holders, delay the filing or initial effectiveness of, or suspend use of, the Demand Registration Statement (a “Demand Suspension”); *provided, however*, that the Company shall not be permitted to exercise a Demand Suspension for a total period of greater than ninety (90) days; and provided further that the Company shall not register any securities for its own account or that of any other stockholder during such ninety (90)-day period, other than pursuant to a registration relating to the sale or grant of securities to employees or directors of the Company or a subsidiary pursuant to a stock option, stock purchase, equity incentive or similar plan; a registration on any form that does not include substantially the same information as would be required to be included in a registration statement covering the sale of the Registrable Securities; or a registration in which the only Common Stock being registered is Common Stock issuable upon conversion of debt securities that are also being registered. In the case of a Demand Suspension, the affected Holders agree to suspend use of the applicable prospectus in connection with any sale or purchase, or offer to sell or purchase, Registrable Securities, upon receipt of the notice referred to above. The Company shall promptly notify the affected Holders in writing upon the termination of any Demand Suspension, amend or supplement the applicable prospectus, if necessary, so it does not contain any untrue statement of a material fact or any omission of a material fact required to be stated therein or necessary to make the statements therein not misleading and furnish to the affected Holders such numbers of copies of the prospectus as so amended or supplemented as the affected Holders may reasonably request.

“Adverse Disclosure” means public disclosure of material non-public information that, in the good faith judgment of the board of directors of the Company: (i) would be required to be made in any registration statement filed with the Commission by the Company so that such registration statement, from and after its effective date, does not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; (ii) would not be required to be made at such time but for the filing, effectiveness or continued use of such registration statement; and (iii) the Company has a *bona fide* business purpose for not disclosing publicly.

4.1.3 Terms. The Company shall bear all fees and expenses attendant to the registration of the Registrable Securities pursuant to Section 4.1.1, but the Holders shall pay any and all underwriting commissions, transfer taxes, if any, attributable to the sale of the Registrable Securities, and the expenses of any legal counsel selected by the Holders to represent them in connection with the sale of the Registrable Securities. The Company shall cause any registration statement filed pursuant to the demand right granted under Section 4.1.1 to remain effective for a period of at least twelve (12) consecutive months after the initial effective date of such registration statement (or such shorter period as will terminate when all Registrable Securities covered by such Demand Registration Statement have been sold or withdrawn). The Holders shall only use the prospectuses provided by the Company to sell the shares covered by such registration statement, and will immediately cease to use any prospectus furnished by the Company if the Company advises the Holder that such prospectus may no longer be used due to a material misstatement or omission.

4.2 “Piggy-Back” Registration.

4.2.1 Grant of Rights. In addition to the demand right of registration described in Section 4.1 hereof, the Holder shall have the right to include the Registrable Securities as part of any other registration of equity securities filed by the Company under the Act (other than in connection with a transaction contemplated by Rule 145(a) promulgated under the Act or pursuant to Form S-8 or Form S-4 or any equivalent or successor form). The Company covenants and agrees to give written notice to applicable Holders, as soon as practicable, of any proposed registration to which the piggyback rights described in this Section 4.2.1 applies, and such written notice shall offer the applicable Holders the opportunity to register under such registration statement, or to sell in such public offering, such number of Registrable Securities as each such Holder may request in writing. The Company agrees to include in such registration statement or in such public offering, as applicable, all such Registrable Securities that are requested in writing to be included therein within five (5) business days after the date the Company delivered the written notice; *provided, however*, that if, solely in connection with any primary underwritten public offering for the account of the Company, the managing underwriter(s) thereof shall, in its reasonable discretion, impose a limitation on the number of Common Stock which may be included in the Registration Statement because, in such underwriter(s)’ judgment, marketing or other factors dictate such limitation is necessary to facilitate public distribution, then the Company shall be obligated to include in such Registration Statement only such limited portion of the Registrable Securities with respect to which the Holder requested inclusion hereunder as the underwriter shall reasonably permit. Any exclusion of Registrable Securities shall be made pro rata among the Holders seeking to include Registrable Securities in proportion to the number of Registrable Securities sought to be included by such Holders; *provided, however*, that the Company shall not exclude any Registrable Securities unless the Company has first excluded all outstanding securities, the holders of which are not entitled to inclusion of such securities in such Registration Statement or are not entitled to pro rata inclusion with the Registrable Securities.

If at any time after giving written notice of its intention to register or sell any securities and prior to the effective date of the registration statement filed in connection with such registration, or the pricing or trade date of a public offering, the Company determines for any reason not to register or sell or to delay the registration or sale of such securities, the Company shall give written notice of such determination to each affected Holder and, thereupon, (i) in the case of a determination not to register or sell, shall be relieved of its obligation to register or sell any Registrable Securities in connection with such registration or public Offering (but not from its obligation to pay the registration expenses in connection therewith), and (y) in the case of a determination to delay registration or sale, shall be permitted to delay registering or selling any Registrable Securities, for the same period as the delay in registering or selling such other securities.

4.2.2 Terms. The Company shall bear all fees and expenses attendant to registering the Registrable Securities pursuant to Section 4.2.1 hereof, but the Holders shall pay any and all underwriting commissions and the expenses of any legal counsel selected by the Holders to represent them in connection with the sale of the Registrable Securities. Except as otherwise provided in this Purchase Warrant, there shall be no limit on the number of times the Holder may request registration under this Section 4.2.2; provided, however, that such registration rights shall terminate on a date that is seven (7) years from the Effective Date.

4.3 General Terms.

4.3.1 Exercise of Purchase Warrants. Nothing contained in this Purchase Warrant shall be construed as requiring the Holders to exercise their Purchase Warrants prior to or after the initial filing of any registration statement or the effectiveness thereof.

4.3.2 Underwriting Agreement. In the case of an underwritten public offering under Section 4.1, the Company shall enter into an underwriting agreement with the managing underwriter(s), if any, selected by a majority of Holders whose Registrable Securities are being registered pursuant to Section 4.1, which managing underwriter shall be reasonably satisfactory to the Company. Such agreement shall be reasonably satisfactory in form and substance to the Company. The Holders shall be parties to any underwriting agreement relating to an underwritten sale of their Registrable Securities.

4.3.3 Documents to be Delivered by Holders. Each of the Holders participating in any of the foregoing offerings shall furnish to the Company a completed and executed questionnaire provided by the Company requesting information customarily sought of selling security holders. The Company may exclude from registration or sale the Registrable Securities of any such Holder who unreasonably fails to furnish such information within a reasonable time after receiving such request.

4.3.4 Indemnification by Holders. Each selling Holder agrees (severally and not jointly) to indemnify and hold harmless, to the fullest extent permitted by law, the Company, its directors and officers and each person who controls the Company (within the meaning of the Act or the Securities Exchange Act of 1934, as amended) from and against any losses resulting from (i) any untrue statement of a material fact in any registration statement under which such Registrable Securities were registered or sold under the Act (including any final, preliminary or summary prospectus contained therein or any amendment thereof or supplement thereto or any documents incorporated by reference therein) or (ii) any omission to state therein a material fact required to be stated therein or necessary to make the statements therein (in the case of a prospectus or preliminary prospectus, in light of the circumstances under which they were made) not misleading, in each case to the extent, but only to the extent, that such untrue statement or omission is contained in such selling Holder's selling stockholder information.

4.4 Termination of Registration Rights. The registration rights afforded to the Holders under this Section 4 shall terminate on the earliest date when all Registrable Securities of such Holder either: (i) have been publicly sold by such Holder pursuant to an applicable registration statement, (ii) have been covered by an effective registration statement on Form S-1 or Form S-3 (or successor form), which may be kept effective as an evergreen registration statement, or (iii) may be sold by the Holder within a 90 day period without registration pursuant to Rule 144 or consistent with applicable SEC interpretive guidance (including CD&I No. 201.04 (April 2, 2007) or similar interpretive guidance).

5. New Purchase Warrants to be Issued.

5.1 Partial Exercise or Transfer. Subject to the restrictions in Section 3 hereof, this Purchase Warrant may be exercised or assigned in whole or in part. In the event of the exercise or assignment hereof in part only, upon surrender of this Purchase Warrant for cancellation, together with the duly executed exercise or assignment form and funds sufficient to pay any Exercise Price and/or transfer tax, the Company shall cause to be delivered to the Holder without charge a new Purchase Warrant of like tenor to this Purchase Warrant in the name of the Holder evidencing the right of the Holder to purchase the number of shares of Common Stock purchasable hereunder as to which this Purchase Warrant has not been exercised or assigned.

5.2 Lost Certificate. Upon receipt by the Company of evidence satisfactory to it of the loss, theft, destruction or mutilation of this Purchase Warrant and of reasonably satisfactory indemnification or the posting of a bond, the Company shall execute and deliver a new Purchase Warrant of like tenor and date. Any such new Purchase Warrant executed and delivered as a result of such loss, theft, mutilation or destruction shall constitute a substitute contractual obligation on the part of the Company.

6. Adjustments.

6.1 Adjustments to Exercise Price and Number of Shares of Common Stock. The Exercise Price and the number of shares of Common Stock underlying this Purchase Warrant shall be subject to adjustment from time to time as hereinafter set forth:

6.1.1 Share Dividends; Split Ups. If, after the date hereof, and subject to the provisions of Section 6.3 below, the number of outstanding Common Stock is increased by a stock dividend payable in Common Stock or by a split up of the Common Stock or other similar event, then, on the effective day thereof, the number of shares of Common Stock purchasable hereunder shall be increased in proportion to such increase in outstanding shares of Common Stock, and the Exercise Price shall be proportionately decreased.

6.1.2 Aggregation of Shares of Common Stock. If, after the date hereof, and subject to the provisions of Section 6.3 below, the number of outstanding shares of Common Stock is decreased by a consolidation, combination or reclassification of the Common Stock or other similar event, then, on the effective date thereof, the number of shares of Common Stock purchasable hereunder shall be decreased in proportion to such decrease in outstanding shares, and the Exercise Price shall be proportionately increased.

6.1.3 Replacement of Common Stock upon Reorganization, etc. In case of any reclassification or reorganization of the outstanding Common Stock other than a change covered by Section 6.1.1 or Section 6.1.2 hereof or that solely affects the par value of such Common Stock, or in the case of any share reconstruction or amalgamation or consolidation of the Company with or into another corporation (other than a consolidation or share reconstruction or amalgamation in which the Company is the continuing corporation and that does not result in any reclassification or reorganization of the outstanding Common Stock), or in the case of any sale or conveyance to another corporation or entity of the property of the Company as an entirety or substantially as an entirety in connection with which the Company is dissolved, the Holder of this Purchase Warrant shall have the right thereafter (until the expiration of the right of exercise of this Purchase Warrant) to receive upon the exercise hereof, for the same aggregate Exercise Price payable hereunder immediately prior to such event, the kind and amount of Common Stock or other securities or property (including cash) receivable upon such reclassification, reorganization, share reconstruction or amalgamation, or consolidation, or upon a dissolution following any such sale or transfer, by a Holder of the number of shares of Common Stock of the Company obtainable upon exercise of this Purchase Warrant immediately prior to such event; and if any reclassification also results in a change in Common Stock covered by Section 6.1.1 or Section 6.1.3, then such adjustment shall be made pursuant to Section 6.1.1, Section 6.1.2 and this Section 6.1.3. The provisions of this Section 6.1.3 shall similarly apply to successive reclassifications, reorganizations, share reconstructions or amalgamations, or consolidations, sales or other transfers.

6.1.4 Fundamental Transaction. If, at any time while this Purchase Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another person and the Company is not the surviving entity, (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any direct or indirect purchase offer, tender offer or exchange offer (whether by the Company or another person) is completed pursuant to which holders of the Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding voting rights, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spinoff or scheme of arrangement) with another person or group of persons whereby such other person or group acquires more than 50% of the outstanding voting rights (not including any voting rights held by the other person or other persons making or party to, or associated or affiliated with, the other persons making or party to such stock or share purchase agreement or other business combination) (each a "Fundamental Transaction"), the Company shall deliver written notice of such Fundamental Transaction to the Holder at least ten (10) business days prior to the consummation of such Fundamental Transaction (the "Fundamental Transaction Notice"). Upon receipt of the Fundamental Transaction Notice, the Holder shall have five (5) business days to exercise this Purchase Warrant in accordance with Section 2.1 and thereby participate in the Fundamental Transaction on a *pari passu* basis with the holders of Common Stock. If the Holder does not elect to exercise this Purchase Warrant within five (5) business days of receipt of the Fundamental Transaction Notice, this Purchase Warrant shall become and be void without further force or effect, and all rights represented hereby shall cease and expire upon the consummation of such Fundamental Transaction.

6.1.5 Changes in Form of Purchase Warrant. This form of Purchase Warrant need not be changed because of any change pursuant to this Section 6.1, and Purchase Warrants issued after such change may state the same Exercise Price and the same number of shares of Common Stock as are stated in the Purchase Warrants initially issued pursuant to this Agreement. The acceptance by any Holder of the issuance of new Purchase Warrants reflecting a required or permissive change shall not be deemed to waive any rights to an adjustment occurring after the date hereof or the computation thereof.

6.2 Substitute Purchase Warrant. In case of any consolidation of the Company with, or share reconstruction or amalgamation of the Company with or into, another corporation (other than a Fundamental Transaction or a consolidation or share reconstruction or amalgamation which does not result in any reclassification or change of the outstanding Common Stock), the corporation formed by such consolidation or share reconstruction or amalgamation shall execute and deliver to the Holder a supplemental Purchase Warrant providing that the holder of each Purchase Warrant then outstanding or to be outstanding shall have the right thereafter (until the stated expiration of such Purchase Warrant) to receive, upon exercise of such Purchase Warrant, the kind and amount of shares of Common Stock and other securities and property receivable upon such consolidation or share reconstruction or amalgamation, by a holder of the number of shares of Common Stock of the Company for which such Purchase Warrant might have been exercised immediately prior to such consolidation, share reconstruction or amalgamation, sale or transfer. Such supplemental Purchase Warrant shall provide for adjustments which shall be identical to the adjustments provided for in this Section 6. The above provision of this Section 6 shall similarly apply to successive consolidations or share reconstructions or amalgamations.

6.3 Elimination of Fractional Interests. The Company shall not be required to issue certificates representing fractions of a share of Common Stock upon the exercise of the Purchase Warrant, nor shall it be required to issue scrip or pay cash in lieu of any fractional interests, it being the intent of the parties that all fractional interests shall be eliminated by rounding any fraction up to the nearest whole number of shares of Common Stock or other securities, properties or rights.

7. Reservation. The Company shall at all times while this Purchase Warrant remains outstanding, reserve and keep available out of its authorized but unissued Common Stock, solely for the purpose of issuance upon exercise of this Purchase Warrant, such number of shares of Common Stock or other securities, properties or rights as shall be issuable upon the exercise thereof, and if at any time the number of authorized but unissued shares of Common Stock shall not be sufficient for such purpose, the Company shall take such corporate action as may be necessary to increase its authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purpose. The Company covenants and agrees that, upon exercise of this Purchase Warrant and payment of the Exercise Price therefor, in accordance with the terms hereby, all Common Stock and other securities issuable upon such exercise shall be duly and validly issued, fully paid and non-assessable.

8. Certain Notice Requirements.

8.1 Holder's Right to Receive Notice. Nothing herein shall be construed as conferring upon the Holders the right to vote or consent or to receive notice as a stockholder for the election of directors or any other matter, or as having any rights whatsoever as a stockholder of the Company. If, however, at any time prior to the expiration of the Purchase Warrants and their exercise, any of the events described in Section 8.2 shall occur, then, in one or more of said events, the Company shall give written notice of such event at least five (5) business days prior to the date fixed as a record date or the date of closing the transfer books (the "Notice Date") for the determination of the stockholders entitled to such dividend, distribution, conversion or exchange of securities or subscription rights, or entitled to vote on such proposed dissolution, liquidation, winding up or sale. Such notice shall specify such record date or the date of the closing of the transfer books, as the case may be. Notwithstanding the foregoing, the Company shall deliver to each Holder a copy of each notice given to the other stockholders of the Company at the same time and in the same manner that such notice is given to the stockholders. Notwithstanding the foregoing, no notice shall be required if the information is disseminated in a press release or document filed with the Commission within such time period.

8.2 Events Requiring Notice. The Company shall be required to give the notice described in this Section 8 upon one or more of the following events: (i) if the Company shall take a record of the holders of its Common Stock for the purpose of entitling them to receive a dividend or distribution payable otherwise than in cash, or a cash dividend or distribution payable otherwise than out of retained earnings, as indicated by the accounting treatment of such dividend or distribution on the books of the Company, (ii) the Company shall offer to all the holders of its Common Stock any additional Common Stock or securities convertible into or exchangeable for Common Stock, or any option, right or warrant to subscribe therefor, or (iii) a dissolution, liquidation or winding up of the Company (other than in connection with a consolidation or share reconstruction or amalgamation) or a sale of all or substantially all of its property, assets and business shall be proposed. Notwithstanding the foregoing, no notice shall be required if the information is disseminated in a press release or document filed with the Commission within such time period.

8.3 Notice of Change in Exercise Price. The Company shall, promptly after an event requiring a change in the Exercise Price pursuant to Section 6 hereof, send notice to the Holders of such event and change ("Price Notice"). The Price Notice shall describe the event causing the change and the method of calculating same and shall be certified as being true and accurate by the Company's Chief Financial Officer or other appropriate officer of the Company. Notwithstanding the foregoing, no notice shall be required if the information is disseminated in a press release or document filed with the Commission within such time period.

8.4 Transmittal of Notices. All notices, requests, consents, claims, demands, waivers, and other communications hereunder shall be in writing and shall be deemed to have been given: (a) when delivered by hand (with written confirmation of receipt); (b) when received by the addressee if sent by a nationally recognized overnight courier (receipt requested); (c) on the date sent by e-mail of a PDF document (with confirmation of transmission) if sent during normal business hours of the recipient, and on the next Business Day if sent after normal business hours of the recipient; or (d) on the third day after the date mailed, by certified or registered mail, return receipt requested, postage prepaid. Such communications must be sent to the respective parties at the addresses indicated below (or at such other address for a party as shall be specified in a notice given in accordance with this Section 8.4).

If to the Company:

FibroBiologics, Inc.
455 E. Medical Center Blvd, Suite 300
Houston, Texas 77598
Email:
Attention: Chief Executive Officer

If to the Holder:

9. Miscellaneous.

9.1 Amendments. The Company may from time to time supplement or amend this Purchase Warrant without the approval of any of the Holders in order to cure any ambiguity, to correct or supplement any provision contained herein that may be defective or inconsistent with any other provisions herein, or to make any other provisions in regard to matters or questions arising hereunder that the Company may deem necessary or desirable and that the Company determines shall not adversely affect the interest of the Holders. All other modifications or amendments shall require the written consent of and be signed by Holders of a majority of the outstanding Purchase Warrants.

9.2 Headings. The headings contained herein are for the sole purpose of convenience of reference, and shall not in any way limit or affect the meaning or interpretation of any of the terms or provisions of this Purchase Warrant.

9.3 Entire Agreement. This Purchase Warrant (together with the other agreements and documents being delivered pursuant to or in connection with this Purchase Warrant) constitutes the entire agreement of the parties hereto with respect to the subject matter hereof, and supersedes all prior agreements and understandings of the parties, oral and written, with respect to the subject matter hereof.

9.4 Binding Effect. This Purchase Warrant shall inure solely to the benefit of and shall be binding upon, the Holder and the Company and their permitted assignees, respective successors, legal representative and assigns, and no other person shall have or be construed to have any legal or equitable right, remedy or claim under or in respect of or by virtue of this Purchase Warrant or any provisions herein contained.

9.5 Governing Law; Submission to Jurisdiction; Trial by Jury. This Purchase Warrant shall be governed by and construed and enforced in accordance with the laws of the State of Delaware, without giving effect to conflict of laws principles thereof. Any legal suit, action, or proceeding arising out of or based upon this Purchase Warrant or the transactions contemplated hereby may be instituted in the federal courts of the United States of America located within the State of Delaware or the courts of the State of Delaware, and each party irrevocably submits to the exclusive jurisdiction of such courts in any such suit, action, or proceeding, and hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenient forum. The Company and the Holder agree that the prevailing party(ies) in any such action shall be entitled to recover from the other party(ies) all of its reasonable attorneys' fees and expenses relating to such action or proceeding and/or incurred in connection with the preparation therefor. The Company (on its behalf and, to the extent permitted by applicable law, on behalf of its stockholders and affiliates) and the Holder hereby irrevocably waive, to the fullest extent permitted by applicable law, any and all right to trial by jury in any legal proceeding arising out of or relating to this Purchase Warrant or the transactions contemplated hereby.

9.6 Waiver, etc. The failure of the Company or the Holder to at any time enforce any of the provisions of this Purchase Warrant shall not be deemed or construed to be a waiver of any such provision, nor to in any way affect the validity of this Purchase Warrant or any provision hereof or the right of the Company or any Holder to thereafter enforce each and every provision of this Purchase Warrant. No waiver of any breach, non-compliance or non-fulfillment of any of the provisions of this Purchase Warrant shall be effective unless set forth in a written instrument executed by the party or parties against whom or which enforcement of such waiver is sought; and no waiver of any such breach, non-compliance or non-fulfillment shall be construed or deemed to be a waiver of any other or subsequent breach, non-compliance or non-fulfillment.

9.7 Severability. If any term or provision of this Purchase Warrant is invalid, illegal, or unenforceable in any jurisdiction, such invalidity, illegality, or unenforceability shall not affect any other term or provision of this Purchase Warrant or invalidate or render unenforceable such term or provision in any other jurisdiction.

9.8 Execution in Counterparts. This Purchase Warrant may be executed in one or more counterparts, and by the different parties hereto in separate counterparts, each of which shall be deemed to be an original, but all of which taken together shall constitute one and the same agreement, and shall become effective when one or more counterparts has been signed by each of the parties hereto and delivered to each of the other parties hereto. Such counterparts may be delivered by facsimile transmission or other electronic transmission.

[Signature Page to Follow]

IN WITNESS WHEREOF, the Company has caused this Purchase Warrant to be signed by its duly authorized officer as of the ___ day of ___, 2023.

FIBROBIOLOGICS, INC.

By: _____
Name: Pete O'Heeron
Title: Chief Executive Officer

EXHIBIT A
(to Warrant to Purchase Common Stock)

NOTICE OF EXERCISE

TO: FIBROBIOLOGICS, INC.

(1) The undersigned hereby elects to purchase [*] shares of Common Stock of the Company pursuant to the terms of the attached Purchase Warrant, and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall be in lawful money of the United States payable in cash, by wire transfer of immediately available funds to an account designated by the Company or by certified check.

(3) Please register and issue said Common Stock in the name of the undersigned or in such other name as is specified below:

The Common Stock issuable pursuant to this notice shall be delivered to the following DWAC Account Number or by physical delivery of a certificate to:

(4) Accredited Investor. The undersigned is an “accredited investor” as defined in Regulation D promulgated under the Securities Act of 1933, as amended.

[SIGNATURE OF HOLDER]

Name of Investing Entity:

Signature of Authorized Signatory of Investing Entity:

Name of Authorized Signatory:

Title of Authorized Signatory:

Date:

EXHIBIT B
(to Warrant to Purchase Common Stock)

ASSIGNMENT FORM

(To assign the foregoing warrant, execute
this form and supply required information.
Do not use this form to exercise the warrant.)

FOR VALUE RECEIVED, [*] all of or [*] shares Common Stock of the foregoing Purchase Warrant and all rights evidenced thereby are hereby assigned to: [NAME]

whose address is:

Dated: _____, 20__

Holder's Signature:

Holder's Address:

NOTE: The signature to this Assignment Form must correspond with the name as it appears on the face of the Purchase Warrant, without alteration or enlargement or any change whatsoever. Officers of corporations and those acting in a fiduciary or other representative capacity should file proper evidence of authority to assign the foregoing Purchase Warrant.

FORM OF COMMON STOCK PURCHASE WARRANT

FIBROBIOLOGICS, INC.

Warrant Shares: []

Initial Exercise Date: [], 2024

Issue Date: [], 2024

THIS COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, _____ or its assigns (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after [], 2024 (the "Initial Exercise Date") and on or prior to 5:00 p.m. (New York City time) on [], 2029 (the "Termination Date"), but not thereafter, to subscribe for and purchase from **FibroBiologics, Inc.**, a Delaware corporation (the "Company"), up to _____ shares (as subject to adjustment hereunder, the "Warrant Shares") of common stock, par value \$0.00001 per share (the "Common Stock"). The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Securities Purchase Agreement (the "Purchase Agreement"), dated [], 2024, between the Company and each purchaser signatory thereto.

Section 2. Exercise.

a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company of a duly executed PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise in the form annexed hereto as **Exhibit A** (the "Notice of Exercise"). Within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the Warrant Shares specified in the applicable Notice of Exercise by wire transfer or cashier's check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and this Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased as set forth in the applicable Notice(s) of Exercise. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise within one (1) Trading Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.** For the avoidance of doubt, there is no circumstance that would require the Company to net cash settle this Warrant.

b) Exercise Price. The exercise price per share of Common Stock under this Warrant shall be \$_____, subject to adjustment hereunder (the “Exercise Price”).

c) Cashless Exercise. If at the time of exercise hereof there is no effective registration statement registering the Warrant Shares or the prospectus contained therein is not available for the issuance of the Warrant Shares to the Holder, then this Warrant may only be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. (“Bloomberg”) as of the time of the Holder’s execution of the applicable Notice of Exercise if such Notice of Exercise is executed during “regular trading hours” on a Trading Day and is delivered within two (2) hours thereafter (including until two (2) hours after the close of “regular trading hours” on a Trading Day) pursuant to Section 2(a) hereof or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is both executed and delivered pursuant to Section 2(a) hereof after the close of “regular trading hours” on such Trading Day;

(B) = the Exercise Price, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrant. The Company agrees not to take any position contrary to this Section 2(c), except to the extent required by applicable law, rules, or regulations.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if the Common Stock is not then listed or quoted on a Trading Market and if prices for the Common Stock are then reported on OTCQB or OTCQX, the VWAP of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX, as applicable, (c) if the Common Stock is not then listed or quoted for trading on a Trading Market, OTCQB or OTCQX and if prices for the Common Stock are then reported on The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Trading Day” means any day on which the Trading Market is open for trading, including any day on which the Trading Market is open for trading for a period of time less than the customary time.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Select Market, the Nasdaq Global Market, or the New York Stock Exchange (or any successors to any of the foregoing).

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if the Common Stock is not then listed or quoted on a Trading Market and if prices for the Common Stock are then reported on OTCQB or OTCQX, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX, as applicable, (c) if the Common Stock is not then listed or quoted for trading on a Trading Market, OTCQB or OTCQX and prices for the Common Stock are then reported on The Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the holders of a majority in interest of the Common Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

d) Call Option. Subject to the provisions of Section 2(f), the Company reserves the right to call for cancellation of all or any portion of this Warrant for which a Notice of Exercise has not yet been delivered (such right, a “Call”), for consideration equal to \$0.0001 per Warrant Share, by delivering a notice of call in writing (a “Call Notice”) to the Holder, indicating the unexercised portion of this Warrant to which such notice applies, within 30 days after the public announcement by the Company of [] (the “[]”); provided, that at the time of delivery of the Call Notice the holder is not in possession of any material non-public information that was provided by the Company or any of its officers, directors, employees, agents, or affiliates. If the conditions set forth below for such Call are satisfied for the period from the date of the Call Notice through and including the Call Date (as defined below), then any portion of this Warrant subject to such Call Notice for which a Notice of Exercise shall not have been received by the Call Date will be cancelled at 6:30 p.m. (New York City time) on the twentieth Trading Day after the date the Call Notice is received by the Holder (such date and time, the “Call Date”); provided, however, that to the extent that the issuance of Warrant Shares subject to a Call Notice would cause a violation of the Beneficial Ownership Limitation set forth in Section 2(f) were a Notice of Exercise to be delivered, notwithstanding anything to the contrary set forth in this Warrant, the holder may deliver a Notice of Exercise together with the Exercise Price for such exercise less \$0.0001 per Warrant Share with respect to the number of Warrant Shares that would be in excess of the Beneficial Ownership Limitation, and thereafter the terms of this Warrant shall be modified solely with respect to such number of Warrant Shares (A) that are in excess of the Beneficial Ownership Limitation and (B) for which such Notice of Exercise and Exercise Price were also delivered in order to (i) provide that the Warrant shall be exercisable until exercised in full rather than on or prior to the Termination Date as defined herein, (ii) provide for an Exercise Price of \$0.0001 per Warrant Share, subject to adjustment hereunder, and (iii) permit the Warrant to be exercised at any time by means of a “cashless exercise,” and thereafter this Section 2(d) shall not apply to the Warrant with respect to such Warrant Shares. Any unexercised portion of this Warrant to which the Call Notice does not pertain will be unaffected by such Call Notice. In furtherance thereof, the Company covenants and agrees that it will honor all Notices of Exercise with respect to Warrant Shares subject to a Call Notice that are tendered by 6:30 p.m. (New York City time) on the Call Date. The parties agree that any Notice of Exercise delivered following a Call Notice that calls less than all of this Warrant shall first reduce to zero the number of Warrant Shares subject to such Call Notice prior to reducing the remaining Warrant Shares available for purchase under this Warrant. For example, if (A) this Warrant then permits the Holder to acquire 100 Warrant Shares, (B) a Call Notice pertains to 75 Warrant Shares, and (C) prior to 6:30 p.m. (New York City time) on the Call Date the Holder tenders a Notice of Exercise in respect of 50 Warrant Shares, then (x) on the Call Date the right under this Warrant to acquire 25 Warrant Shares will be automatically cancelled, (y) the Company, in the time and manner required under this Warrant, will have issued and delivered to the Holder 50 Warrant Shares in respect of the exercises following receipt of the Call Notice, and (z) the Holder may, until the Termination Date, exercise this Warrant for 25 Warrant Shares (subject to adjustment as herein provided and subject to subsequent Call Notices). Subject again to the provisions of this Section 2(d), the Company may deliver subsequent Call Notices for any portion of this Warrant for which the Holder shall not have delivered a Notice of Exercise. Notwithstanding anything to the contrary set forth in this Warrant, the Company may not deliver a Call Notice or require the cancellation of this Warrant (and any such Call Notice shall be void) unless, from the time of the [] through the Call Date, (1) the Company shall have honored in accordance with the terms of this Warrant all Notices of Exercise delivered by 6:30 p.m. (New York City time) on the Call Date, (2) a registration statement shall be effective as to all Warrant Shares and the prospectus thereunder available for use by the Company for the sale of all such Warrant Shares to the Holder, (3) the Common Stock shall be listed or quoted for trading on a Trading Market, and (4) there is a sufficient number of authorized shares of Common Stock for issuance of all Securities under the Transaction Documents. The Company’s right to call the Warrant under this Section 2(d) shall be exercised ratably among the holders of a majority in interest of the Common Warrants then outstanding.

e) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder's or its designee's balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system ("DWAC") if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery of a certificate representing the Warrant Shares, registered in the Company's share register in the name of the Holder or its designee, for the number of Warrant Shares set forth in the Notice of Exercise to the address specified by the Holder in such Notice of Exercise by the date that is the earliest of (i) two (2) Trading Days after the delivery to the Company of the Notice of Exercise, (ii) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company, and (iii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the "Warrant Share Delivery Date"). Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) two (2) Trading Days and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the third Trading Day after the Warrant Share Delivery Date) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent (which may be the Transfer Agent) that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, "Standard Settlement Period" means the standard settlement period, expressed in a number of Trading Days, on the Company's primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise. Notwithstanding the foregoing, with respect to any Notice(s) of Exercise delivered on or prior to 9:00 a.m. (New York City time) on the Initial Exercise Date, which may be delivered at any time after the time of execution of the Purchase Agreement, the Company agrees to deliver, or cause to be delivered, the Warrant Shares subject to such notice(s) by 4:00 p.m. (New York City time) on the Initial Exercise Date, and the Initial Exercise Date shall be the Warrant Share Delivery Date for purposes hereunder, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received by such Warrant Share Delivery Date. The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time will be less than the amount stated on the face hereof.

ii. Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

iii. Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d)(i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

iv. Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares that the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the Warrant Shares so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of this Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases shares of Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of Warrants with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of this Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share that the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share of Common Stock.

vi. Charges, Taxes and Expenses. The issuance and delivery of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form, attached hereto as **Exhibit B**, duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner that prevents the timely exercise of this Warrant, pursuant to the terms hereof.

f) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with (i) the Holder's Affiliates, (ii) any other Persons acting as a group together with the Holder or any of the Holder's Affiliates, and (iii) any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for the purposes of determination of beneficial ownership pursuant to Section 13(d) and Rule 13d-3 of the Exchange Act (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of Warrant Shares issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of Warrant Shares that would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(f), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(f) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination and shall have no liability for exercises of this Warrant that are not in compliance with the Beneficial Ownership Limitation, except to the extent the Holder has detrimentally relied on the number of outstanding shares of Common Stock that was provided in writing by the Company. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, and the Company shall have no obligation to verify or confirm the accuracy of such determination and shall have no liability for exercises of this Warrant that are not in compliance with the Beneficial Ownership Limitation, except to the extent the Holder relies on the number of outstanding shares of Common Stock that was provided by the Company. For purposes of this Section 2(f), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written request of a Holder, the Company shall within one Trading Day confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be [4.99/9.99]% of the Common Stock outstanding immediately after giving effect to the issuance of Warrant Shares issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(f), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the Common Stock outstanding immediately after giving effect to the issuance of Warrant Shares upon exercise of this Warrant held by the Holder and the provisions of this Section 2(f) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61st day after such notice is delivered to the Company. The provisions of this paragraph shall not be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(f) to correct this paragraph (or any portion hereof) that may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant. To the extent that this Warrant is unexercisable as a result of the Holder's Beneficial Ownership Limitation, no alternate consideration is owing to the Holder.

Section 3. Certain Adjustments.

a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock, (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant remains unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b) Reserved.

c) Dividends or Distributions. If the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (for purposes of this Section 3(d), a “Distribution”), at any time after the issuance of this Warrant, then, in each such case: (i) any Exercise Price in effect immediately prior to the close of business on the record date fixed for the determination of holders of shares of Common Stock entitled to receive the Distribution shall be reduced, effective as of the close of business on such record date, to a price determined by multiplying such Exercise Price by a fraction of which (1) the numerator shall be the VWAP of the shares of Common Stock on the trading day immediately preceding such record date minus the value of the Distribution (as determined in good faith by the Company’s Board of Directors) applicable to one share of Common Stock, and (2) the denominator shall be the VWAP of the shares of Common Stock on the Trading Day immediately preceding such record date; and (ii) the number of Warrant Shares shall be increased to a number of shares equal to the number of shares of Common Stock issuable upon conversion of the Warrant Shares immediately prior to the close of business on the record date fixed for the determination of holders of shares of Common Stock entitled to receive the Distribution multiplied by the reciprocal of the fraction set forth in this Section 3(d).

d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person in which the Company is not the surviving entity (other than a reincorporation in a different state, a transaction for changing the Company's name, or a similar transaction pursuant to which the surviving company remains a public company), (ii) the Company, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of the Company's assets in one or a series of related transactions (which, for the avoidance of doubt, shall not include such transactions that do not require approval of the Company's stockholders), (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of more than 50% of the voting power of the common equity of the Company, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires more than 50% of the voting power of the common equity of the Company, other than Pete O'Heeron, CEO, through his holdings of Common Stock and Series C Preferred Stock, (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(f) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(f) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant and the other Transaction Documents in accordance with the provisions of this Section 3(e) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant that is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price that applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and that is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

f) Notice to Holder.

i. Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Exercise by Holder. If, while this Warrant is outstanding, (A) the Company declares a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company declares a special nonrecurring cash dividend on, or a redemption of, the Common Stock, (C) the Company authorizes the granting to all holders of shares of Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company is required in connection with a Fundamental Transaction, or (E) the Company authorizes the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by email to the Holder at its last email address as it shall appear upon the Warrant Register of the Company, at least three calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the shares of Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the shares of Common Stock of record shall be entitled to exchange their shares of Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice; and provided, further, that no notice shall be required if the information is disseminated in a press release or a document filed with the Commission. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

iii. Voluntary Adjustment by the Company. Subject to the rules and regulations of the Trading Market or any other exchanges on which the Common Stock is then listed, the Company may at any time during the term of this Warrant, subject to the prior written consent of the Holder, reduce the then current Exercise Price to any amount and for any period of time deemed appropriate by the board of directors of the Company.

Section 4. Transfer of Warrant.

a) Transferability. Subject to compliance with applicable securities law, this Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. This Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. Subject to compliance with applicable securities law, this Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer that may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the Issue Date and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

c) Warrant Register. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the “Warrant Register”), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

Section 5. Miscellaneous.

a) No Rights as Stockholder Until Exercise; No Settlement in Cash. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3. Without limiting any rights of a Holder to receive Warrant Shares on a “cashless exercise” pursuant to Section 2(c) or to receive cash payments pursuant to Section 2(d)(i) or 2(d)(iv) herein, in no event shall the Company be required to net cash settle an exercise of this Warrant.

b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of this Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Trading Day, then such action may be taken or such right may be exercised on the next succeeding Trading Day.

d) Authorized Shares.

The Company covenants that, during the period this Warrant is outstanding, it will reserve from its authorized and unissued shares of Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares underlying this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued and delivered as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares that may be issued and delivered upon the exercise of this Warrant will, upon exercise of this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any shares of Common Stock above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable shares of Common Stock upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action that would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

e) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the provisions of the Purchase Agreement.

f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

g) Nonwaiver and Expenses. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies. Without limiting any other provision of this Warrant or the Purchase Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, and such failure results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable attorneys' fees, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

h) Notices. Any notice, request or other document required or permitted to be given or delivered hereunder shall be delivered in accordance with the notice provisions of the Purchase Agreement.

i) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

(Signature Page Follows)

IN WITNESS WHEREOF, the Company has caused this Warrant to be executed by its officer thereunto duly authorized as of the date first above indicated.

FIBROBIOLOGICS, INC.

By: _____
Name: _____
Title: _____

NOTICE OF EXERCISE

TO: FIBROBIOLOGICS, INC.

(1) The undersigned hereby elects to (check applicable box)

purchase and tenders herewith payment of the exercise price in full, _____ Warrant Shares of the Company pursuant to the terms of the attached Warrant, together with all applicable transfer taxes, if any; or

modify the Warrant as set forth in Section 2(d) with respect to the right to purchase _____ Warrant Shares of the Company pursuant to the terms of the attached Warrant, as modified, and tenders herewith payment of the exercise price less \$0.0001 per Warrant Share, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

if permitted the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

The Warrant Shares shall be delivered to the following DWAC Account Number:

[SIGNATURE OF HOLDER]

Name of Investing Entity: _____

Signature of Authorized Signatory of Investing Entity: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Date: _____



ASSIGNMENT FORM

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to exercise the Warrant to purchase Warrant Shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: _____
(Please Print)

Address: _____
(Please Print)

Phone Number: _____

Email Address: _____

Dated: _____, _____

Holder's Signature: _____

Holder's Address: _____



April 25, 2024

FibroBiologics Inc.
455 E. Medical Center Blvd.
Suite 300
Houston, Texas 77598

Norton Rose Fulbright US LLP
1301 McKinney, Suite 5100
Houston, Texas 77010-3095
United States

Tel +1 713 651 5151
Fax +1 713 651 5246
nortonrosefulbright.com

Re: Registration Statement of FibroBiologics Inc. on Form S-1

Dear Sirs:

We have acted as counsel to FibroBiologics Inc. (the **Company**), a Delaware corporation, in connection with its filing of a registration statement on Form S-1 (the **Registration Statement**) filed by the Company under the Securities Act of 1933, as amended (the **Securities Act**), relating to the Company's offering on a best efforts basis of up to 1,801,801 units (the **Units**), each Unit consisting of one share of the Company's common stock, par value \$0.00001 per share (the **common stock**), and one warrant to purchase one share of the Company's common stock (**Warrant**). The Company is also registering up to 1,801,801 shares of common stock underlying the Warrants pursuant to the Registration Statement (the **Warrant Shares**). We have been requested by the Company to render this opinion in connection with the filing of the Registration Statement.

As counsel, we have made such investigations and examined the originals, or duplicate, certified, conformed, telecopied or photostatic copies of such corporate records, agreements, documents and other instruments and have made such other investigations as we have considered necessary or relevant for the purposes of this opinion, including:

- (a) the Registration Statement;
- (b) the Amended & Restated Certificate of Incorporation and Bylaws of the Company;
- (c) a draft Unanimous Written Consent of the Company's Board of Directors approving the issuance of the Units; and
- (d) a Certificate of Good Standing dated April 25, 2024, issued by the Secretary of State of Delaware.

With respect to the accuracy of factual matters material to this opinion, we have relied upon certificates or comparable documents and representations of public officials and of officers of the Company and have not performed any independent check or verification of such factual matters.

In giving this opinion, we have assumed the genuineness of all signatures, the legal capacity of natural persons, the authenticity of all documents submitted to us as originals, the conformity to authentic original documents of all documents submitted to us as duplicates, certified, conformed, telecopied or photostatic copies and the authenticity of the originals of such latter documents, and that all facts set forth in the certificates supplied by officers of the Company are complete, true and accurate as of the date hereof.

Norton Rose Fulbright US LLP is a limited liability partnership registered under the laws of Texas.

Norton Rose Fulbright US LLP, Norton Rose Fulbright LLP, Norton Rose Fulbright Australia, Norton Rose Fulbright Canada LLP and Norton Rose Fulbright South Africa Inc are separate legal entities and all of them are members of Norton Rose Fulbright Verein, a Swiss verein. Norton Rose Fulbright Verein helps coordinate the activities of the members but does not itself provide legal services to clients. Details of each entity, with certain regulatory information, are available at nortonrosefulbright.com.

The opinion set forth below is limited to the General Corporation Law of the State of Delaware in effect on the date hereof. Our opinion is rendered as of the date hereof, and we assume no obligation to advise you of changes in law or fact (or the effect thereof on the opinions expressed herein) that hereafter may come to our attention.

The opinion set forth below is subject to the following exceptions, limitations and qualifications: (i) the effect of bankruptcy, insolvency, reorganization, arrangement, moratorium, fraudulent conveyance, fraudulent transfer and other similar laws relating to or affecting the rights of creditors; (ii) the effect of general principles of equity (including, without limitation, concepts of materiality, reasonableness, good faith and fair dealing and the possible unavailability of specific performance, injunctive relief and other equitable remedies), regardless of whether considered in a proceeding at law or in equity, (iii) the effect of public policy considerations that may limit the rights of the parties to obtain further remedies, (iv) we express no opinion with respect to the enforceability of provisions relating to choice of law, choice of venue, jurisdiction or waivers of jury trial, and (v) we express no opinion with respect to the enforceability of any waiver of any usury defense.

Based on the foregoing, and subject to the assumptions, limitations and qualifications set forth herein, we are of the opinion that:

(i) the common stock, when issued against payment therefor as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable;

(ii) the Warrants, when issued as set forth in the Registration Statement, will be legal, valid and binding obligations of the Company, enforceable against the Company in accordance with their terms; and

(iii) the Warrant Shares, when issued upon exercise of the Warrants against payment therefor as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement and to the use of our name therein. In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the Rules and Regulations of the Commission promulgated thereunder.

Very truly yours,

Norton Rose Fulbright US LLP

SECURITIES PURCHASE AGREEMENT

This Securities Purchase Agreement (this "Agreement") is dated as of April [●], 2024, between FibroBiologics, Inc., a Delaware corporation (the "Company"), and each purchaser identified on the signature pages hereto (each, including its successors and assigns, a "Purchaser" and collectively the "Purchasers").

WHEREAS, subject to the terms and conditions set forth in this Agreement and pursuant to an effective registration statement under the Securities Act (as defined below) as to the Securities, the Company desires to issue and sell to each Purchaser, and each Purchaser, severally and not jointly, desires to purchase from the Company, securities of the Company as more fully described in this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and each Purchaser agree as follows:

ARTICLE I.
DEFINITIONS

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.1:

"Acquiring Person" shall have the meaning ascribed to such term in Section 4.5.

"Action" shall have the meaning ascribed to such term in Section 3.1(j).

"Affiliate" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 405 under the Securities Act.

"Board of Directors" means the board of directors of the Company.

"Business Day" means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed; provided, however, for clarification, commercial banks shall not be deemed to be authorized or required by law to remain closed due to "stay at home", "shelter-in-place", "non-essential employee" or any other similar orders or restrictions or the closure of any physical branch locations at the direction of any governmental authority so long as the electronic funds transfer systems (including for wire transfers) of commercial banks in The City of New York generally are open for use by customers on such day.

"Closing" means the closing of the purchase and sale of the Securities pursuant to Section 2.1.

“Closing Date” means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (i) the Purchasers’ obligations to pay the Subscription Amount and (ii) the Company’s obligations to deliver the Securities, in each case, have been satisfied or waived, but in no event later than the second (2nd) Trading Day following the date hereof.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.00001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Company Counsel” means Norton Rose Fulbright US LLP, with offices located at 1301 McKinney, Suite 5100, Houston, Texas 77010-3095.

“Disclosure Schedules” means the Disclosure Schedules of the Company delivered concurrently herewith.

“Disclosure Time” means, (i) if this Agreement is signed on a day that is not a Trading Day or after 9:00 a.m. (New York City time) and before midnight (New York City time) on any Trading Day, 9:30 a.m. (New York City time) on the Trading Day immediately following the date hereof, unless otherwise instructed as to an earlier time by the Placement Agent, and (ii) if this Agreement is signed between midnight (New York City time) and 9:00 a.m. (New York City time) on any Trading Day, no later than 9:29 a.m. (New York City time) on the date hereof, unless otherwise instructed as to an earlier time by the Placement Agent.

“Evaluation Date” shall have the meaning ascribed to such term in Section 3.1(s).

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Exempt Issuance” means the issuance of (a) Common Stock or equity awards (including the Common Stock underlying such equity awards) to employees, consultants, officers or directors of the Company pursuant to any stock or option plan duly adopted for such purpose, by a majority of the non-employee members of the Board of Directors or a majority of the members of a committee of non-employee directors established for such purpose for services rendered to the Company, (b) securities upon the exercise or exchange of or conversion of (x) any Securities issued hereunder or (y) other securities exercisable or exchangeable for or convertible into Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of the Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits, adjustments or combinations as set forth in such securities) or to extend the term of such securities, provided, further, that the forgoing limitations shall not apply in respect of the GEM Agreement, (c) securities issued pursuant to acquisitions or strategic transactions approved by a majority of the disinterested directors of the Company, provided that such securities are issued as “restricted securities” (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith during the three month period following the Closing Date, and provided that any such issuance shall only be to a Person (or to the equityholders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities, (d) securities in accordance with the GEM Agreement, provided the GEM Agreement has not been amended since the date of this Agreement, except as permitted by the Placement Agent, (e) the issuance of securities in connection with strategic alliances, collaborations and licensing transactions approved by a majority of the non-employee members of the Board of Directors, and (f) the issuance of the Securities in the Offering or the filing of any registration statement or amendment or supplement thereto in connection with the Offering.

“FCPA” means the Foreign Corrupt Practices Act of 1977, as amended.

“Final Prospectus” means the final prospectus, in the form in which it will be filed with the Commission pursuant to Rules 430A and/or 424(b) is hereinafter.

“GAAP” shall have the meaning ascribed to such term in Section 3.1(h).

“GEM Agreement” means the share purchase agreement between the Company and GEM Global Yield LLC SCS and GEM Yield Bahamas Limited, dated as of November 12, 2021.

“Indebtedness” shall have the meaning ascribed to such term in Section 3.1(aa).

“Intellectual Property Rights” shall have the meaning ascribed to such term in Section 3.1(p).

“Liens” means a lien, charge, pledge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

“Lock-Up Agreement” means the Lock-Up Agreement, dated as of the date hereof, in the form of Exhibit A attached hereto.

“Material Adverse Effect” shall have the meaning assigned to such term in Section 3.1(b).

“Material Permits” shall have the meaning ascribed to such term in Section 3.1(n).

“Per Share Purchase Price” equals \$[●], subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Placement Agent” means Maxim Group LLC.

“Placement Agent Counsel” means Thompson Hine LLP, with an address of 300 Madison Avenue, 27th Floor, New York, New York 10017.

“Preliminary Prospectus” means the prospectus in the form in which it appears in the Registration Statement at the time of effectiveness.

“Proceeding” means an action, claim, suit, investigation or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition), whether commenced or threatened.

“Prospectus” shall mean, as the context requires, the Preliminary Prospectus, the Final Prospectus, and any supplement to either thereof.

“Purchaser Party” shall have the meaning ascribed to such term in Section 4.8.

“Registration Statement” means the effective registration statement on Form S-1 (File No. 333-[●]) which registers the sale of the Shares, the Warrants and the Warrant Shares to the Purchasers, and includes any Rule 462(b) Registration Statement.

“Required Approvals” shall have the meaning ascribed to such term in Section 3.1(e).

“Rule 144” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 462(b) Registration Statement” means any registration statement prepared by the Company registering additional Securities, which was filed with the Commission on or prior to the date hereof and became automatically effective pursuant to Rule 462(b) promulgated by the Commission pursuant to the Securities Act.

“SEC Reports” shall have the meaning ascribed to such term in Section 3.1(h).

“Securities” means the Units, Shares, the Warrants and the Warrant Shares.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Shares” means the shares of Common Stock issued or issuable to each Purchaser pursuant to this Agreement.

“Short Sales” means all “short sales” as defined in Rule 200 of Regulation SHO under the Exchange Act (but shall not be deemed to include locating and/or borrowing shares of Common Stock).

“Subscription Amount” means, as to each Purchaser, the Unit Subscription Amount, in accordance with Section 2.1 herein.

“Subsidiary” means any significant subsidiary of the Company as defined in Article 1, Rule 1-02 of Regulation S-X promulgated pursuant to the Securities Act.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, the Pink Market, OTCQB or the OTCQX (or any successors to any of the foregoing).

“Transaction Documents” means this Agreement, the Warrants, the Lock-Up Agreements, the Warrant Agency Agreement, all exhibits and schedules thereto and hereto and any other documents or agreements executed in connection with the transactions contemplated hereunder.

“Transfer Agent” means VStock Transfer, LLC, the current transfer agent of the Company, with a mailing address of 18 Lafayette Place, Woodmere, New York 11598 and any successor transfer agent of the Company.

“Unit” means each unit consisting of (a) one Share and (b) one Warrant.

“Unit Purchase Price” equals \$[●] per each Unit, subject to adjustments for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of Common Stock that occur after the date of this Agreement.

“Unit Subscription Amount” means, as to each Purchaser, the aggregate amount to be paid for the Units hereunder as specified below such Purchaser’s name on the signature page of this Agreement and next to the heading “Unit Subscription Amount”, in immediately available funds.

“Variable Rate Transaction” means a transaction in which the Company (i) issues or sells any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive additional shares of Common Stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon and/or varies with the trading prices of or quotations for the shares of Common Stock at any time after the initial issuance of such debt or equity securities, or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock or (ii) enters into, or effects a transaction under, any agreement, including, but not limited to, an equity line of credit or an “at-the-market offering”, whereby the Company may issue securities at a future determined price.

“Warrants” means, collectively, each warrant to purchase one Warrant Share delivered to the Purchasers at the Closing in accordance with Section 2.2(a) hereof, which warrants shall be exercisable immediately after issuance and will expire five years after the Closing Date, in the form of Exhibit B attached hereto.

“Warrant Agency Agreement” means the warrant agency agreement dated on or about the Closing Date, between the Company and the Transfer Agent.

“Warrant Shares” means the shares of Common Stock issuable upon exercise of the Warrants.

ARTICLE II.
PURCHASE AND SALE

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, substantially concurrent with the execution and delivery of this Agreement by the parties hereto, the Company agrees to sell, and the Purchasers, severally and not jointly, agree to purchase, up to an aggregate of \$[●] of Units as determined pursuant to Section 2.2(a). Each Purchaser's Subscription Amount and amount of Securities being purchased hereunder as set forth on the signature page hereto executed by such Purchaser shall be made available for "Delivery Versus Payment" ("DVP") settlement with the Company or its designee. The Company shall deliver to each Purchaser its respective Securities, and the Company and each Purchaser shall deliver the other items in Section 2.2 deliverable at the Closing. Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3, the Closing shall take place remotely by electronic transfer of the Closing documentation. Each Purchaser acknowledges that, concurrently with the Closing and pursuant to the Prospectus, the Company may sell up to \$[●] of additional Units to purchasers not party to this Agreement. Notwithstanding anything herein to the contrary, if at any time on or after the time of execution of this Agreement by the Company and an applicable Purchaser, through and including the time immediately prior to the Closing (the "Pre-Settlement Period"), such Purchaser sells to any Person all, or any portion, of the Shares to be issued hereunder to such Purchaser at the Closing (collectively, the "Pre-Settlement Shares"), such Purchaser shall, automatically hereunder (without any additional required actions by such Purchaser or the Company), be deemed to be unconditionally bound to purchase, such Pre-Settlement Shares at the Closing; provided, that the Company shall not be required to deliver any Pre-Settlement Shares to such Purchaser prior to the Company's receipt of the purchase price of such Pre-Settlement Shares hereunder; and provided further that the Company hereby acknowledges and agrees that the forgoing shall not constitute a representation or covenant by such Purchaser as to whether or not during the Pre-Settlement Period such Purchaser shall sell any shares of Common Stock to any Person and that any such decision to sell any shares of Common Stock by such Purchaser shall solely be made at the time such Purchaser elects to effect any such sale, if any. Unless otherwise directed by the Placement Agent, settlement of the Securities shall occur via DVP (i.e., on the Closing Date, the Company shall issue the Securities registered in the Purchasers' names and addresses and released by the Transfer Agent directly to the account(s) at the Placement Agent identified by each Purchaser; upon receipt of such Securities, the Placement Agent shall promptly electronically deliver such Securities to the applicable Purchaser, and payment therefor shall be made by the Placement Agent (or its clearing firm) by wire transfer to the Company). Notwithstanding anything herein to the contrary, (i) in no event shall the number of shares of Common Stock being purchased by the Purchasers hereunder, together with any shares of Common Stock being purchased by the Purchasers' Affiliates and any other Person whose beneficial ownership of the Common Stock would or could be aggregated with the Purchasers' for purposes of Section 13(d) of the Exchange Act under other purchase agreements being entered into substantially contemporaneously with this Agreement, exceed 4.99% of the number of shares of Common Stock of the Company outstanding immediately after giving effect to the transaction contemplated hereby, (ii) in no event shall the number of shares of Common Stock and Warrant Shares being purchased by the Purchasers hereunder and by any other purchaser substantially contemporaneously with, or in a transaction related to, the transaction contemplated by this Agreement, exceed 9.99% of the number of shares of Common Stock outstanding immediately before giving effect to the transactions contemplated hereby or thereby (deeming any Warrant Shares as Common Stock for purposes of this clause (ii)), and (iii) to the extent either of the limitations in (i) or (ii) would be exceeded, the Subscription Price and the Securities to be purchased hereunder shall be deemed to be automatically reduced so as to result in compliance with such limitations.

2.2 Deliveries.

(a) On or prior to the Closing Date (except as indicated below), the Company shall deliver or cause to be delivered to each Purchaser the following:

(i) this Agreement duly executed by the Company;

(ii) subject to the penultimate sentence of Section 2.1, the Company shall have provided each Purchaser with the Company's wire instructions, on Company letterhead and executed by the Chief Executive Officer or Chief Financial Officer;

(iii) subject to the penultimate sentence of Section 2.1, a copy of the irrevocable instructions to the Transfer Agent instructing the Transfer Agent to deliver on an expedited basis via The Depository Trust Company Deposit or Withdrawal at Custodian system (“DWAC”) Shares equal to such Purchaser’s Subscription Amount divided by the Unit Purchase Price, registered in the name of such Purchaser;

(iv) A Warrant registered in the name of such Purchaser to purchase up to a number of shares of Common Stock equal to 100% of such Purchaser’s Shares, with an exercise price equal to \$[●], subject to adjustment therein;

(v) the duly executed Warrant Agency Agreement;

(vi) on the date hereof, the duly executed Lock-Up Agreements from each director and officer of the Company;

(vii) the Preliminary Prospectus and Final Prospectus (which may be delivered in accordance with Rule 172 under the Securities Act);

(viii) a legal opinion of Company Counsel, in form and substance reasonably satisfactory to the Placement Agent; and

(ix) a certificate, executed by the Chief Executive Officer or the Chief Financial Officer of the Company, dated as of the Closing Date, reaffirming as of the Closing Date the conditions set forth in Section 2.3(b)(i), (ii) and (iv).

(b) On or prior to the Closing Date, each Purchaser shall deliver or cause to be delivered to the Company, the following:

(i) this Agreement duly executed by such Purchaser; and

(ii) such Purchaser’s Subscription Amount, which shall be made available for “Delivery Versus Payment” settlement with the Company or its designee.

2.3 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality, in all respects) on the Closing Date of the representations and warranties of the Purchasers contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects (or, to the extent representations or warranties are qualified by materiality, in all respects) as of such date);

(ii) all obligations, covenants and agreements of each Purchaser required to be performed at or prior to the Closing Date shall have been performed; and

(iii) the delivery by each Purchaser of the items set forth in Section 2.2(b) of this Agreement.

(b) The respective obligations of the Purchasers hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) when made and on the Closing Date of the representations and warranties of the Company contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) as of such date);

(ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Company of the items set forth in Section 2.2(a) of this Agreement;

(iv) there shall have been no Material Adverse Effect with respect to the Company since the date hereof; and

(v) from the date hereof to the Closing Date, trading in the Common Stock shall not have been suspended by the Commission or the Company's principal Trading Market, and, at any time prior to the Closing Date, trading in securities generally as reported by Bloomberg L.P. shall not have been suspended or limited, or minimum prices shall not have been established on securities whose trades are reported by such service, or on any Trading Market, nor shall a banking moratorium have been declared either by the United States or New York State authorities nor shall there have occurred any material outbreak or material escalation of hostilities or other national or international calamity of such magnitude in its effect on, or any material adverse change in, any financial market which, in each case, in the reasonable judgment of such Purchaser, makes it impracticable or inadvisable to purchase the Securities at the Closing.

ARTICLE III. REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as set forth in the Disclosure Schedules, which Disclosure Schedules shall be deemed a part hereof and shall qualify all representations made herein to the extent of the disclosure, the Company hereby makes the following representations and warranties to each Purchaser:

(a) Subsidiaries. All of the Subsidiaries of the Company are set forth in Exhibit 21.1 to the Registration Statement. Except as described in Exhibit 21.1 to the Registration Statement, the Company owns, directly or indirectly, all of the capital stock or other equity interests of each Subsidiary free and clear of any Liens, and all of the issued and outstanding shares of capital stock of each Subsidiary are validly issued and are fully paid non-assessable and free of preemptive and similar rights to subscribe for or purchase securities.

(b) Organization and Qualification. The Company and each of the Subsidiaries is an entity duly incorporated or otherwise organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization, with the requisite power and authority to own and use its properties and assets and to carry on its business as currently conducted. Neither the Company nor any Subsidiary is in violation nor default of any of the provisions of its respective certificate or articles of incorporation, bylaws or other organizational or charter documents. Each of the Company and the Subsidiaries is duly qualified to conduct business and is in good standing as a foreign corporation or other entity in each jurisdiction in which the nature of the business conducted or property owned by it makes such qualification necessary, except where the failure to be so qualified or in good standing, as the case may be, could not have or reasonably be expected to result in: (i) a material adverse effect on the legality, validity or enforceability of any Transaction Document, (ii) a material adverse effect on the results of operations, assets, business, prospects or condition (financial or otherwise) of the Company and the Subsidiaries, taken as a whole, or (iii) a material adverse effect on the Company's ability to perform in any material respect on a timely basis its obligations under any Transaction Document (any of (i), (ii) or (iii), a "Material Adverse Effect") and no Proceeding has been instituted in any such jurisdiction revoking, limiting or curtailing or seeking to revoke, limit or curtail such power and authority or qualification.

(c) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of this Agreement and each of the other Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Board of Directors or the Company's stockholders in connection herewith or therewith other than in connection with the Required Approvals. This Agreement and each other Transaction Document to which it is a party has been (or upon delivery will have been) duly executed by the Company and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(d) No Conflicts. The execution, delivery and performance by the Company of this Agreement and the other Transaction Documents to which it is a party, the issuance and sale of the Securities and the consummation by it of the transactions contemplated hereby and thereby do not and will not (i) conflict with or violate any provision of the Company's or any Subsidiary's certificate or articles of incorporation, bylaws or other organizational or charter documents, or (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any Lien upon any of the properties or assets of the Company or any Subsidiary, or give to others any rights of termination, amendment, anti-dilution or similar adjustments, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) subject to the Required Approvals, conflict with or result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as could not have or reasonably be expected to result in a Material Adverse Effect.

(e) Filings, Consents and Approvals. The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than: (i) the filings required pursuant to Section 4.4 of this Agreement, (ii) the filing with the Commission of the Final Prospectus, (iii) application(s) to each applicable Trading Market for the listing of the Shares and Warrant Shares for trading thereon in the time and manner required thereby, and (iv) such filings as are required to be made under applicable state securities laws (collectively, the “Required Approvals”).

(f) Issuance of the Securities; Registration. The Securities are duly authorized and, when issued and paid for in accordance with the applicable Transaction Documents, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Warrant Shares are duly authorized and, when issued in accordance with the terms of the Warrants, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Company has reserved from its duly authorized capital stock the maximum number of shares of Common Stock issuable pursuant to this Agreement and the Warrants. The Company has prepared and filed the Registration Statement in conformity with the requirements of the Securities Act, which became effective on [●], 2024 (the “Effective Date”), including the Preliminary Prospectus, and such amendments and supplements thereto as may have been required to the date of this Agreement. The Registration Statement is effective under the Securities Act and no stop order preventing or suspending the effectiveness of the Registration Statement or suspending or preventing the use of the Prospectus has been issued by the Commission and no proceedings for that purpose have been instituted or, to the knowledge of the Company, are threatened by the Commission. The Company shall file the Final Prospectus with the Commission pursuant to Rule 424(b). At the time the Registration Statement and any amendments thereto became effective, at the date of this Agreement and at the Closing Date, the Registration Statement and any amendments thereto conformed and will conform in all material respects to the requirements of the Securities Act, and did not and will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein, in the light of the circumstances under which they were made, or necessary to make the statements therein not misleading; and the Prospectus and any amendments or supplements thereto, at the time the Prospectus or any amendment or supplement thereto was issued and at the Closing Date, conformed and will conform in all material respects to the requirements of the Securities Act and did not and will not contain an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(g) Capitalization. The capitalization of the Company is set forth in the Prospectus. The number of shares of Common Stock owned beneficially by the Company's directors and executive officers is set forth in the Prospectus. The Company has not issued any capital stock since its most recently filed periodic report under the Exchange Act, other than pursuant to the exercise of employee stock options under the Company's stock option plans, the issuance of shares of Common Stock to employees pursuant to the Company's employee stock purchase plans and pursuant to the conversion and/or exercise of Common Stock Equivalents outstanding as of the date of the most recently filed periodic report under the Exchange Act. No Person has any right of first refusal, preemptive right, right of participation, or any similar right to participate in the transactions contemplated by the Transaction Documents. Except as described in the Prospectus or as a result of the purchase and sale of the Securities and as set forth on Schedule 3.1(g), there are no outstanding options, warrants, scrip rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities, rights or obligations convertible into or exercisable or exchangeable for, or giving any Person any right to subscribe for or acquire, any shares of Common Stock or the capital stock of any Subsidiary, or contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to issue additional shares of Common Stock or Common Stock Equivalents or capital stock of any Subsidiary. The issuance and sale of the Securities will not obligate the Company or any Subsidiary to issue shares of Common Stock or other securities to any Person (other than the Purchasers). There are no outstanding securities or instruments of the Company or any Subsidiary with any provision that adjusts the exercise, conversion, exchange or reset price of such security or instrument upon an issuance of securities by the Company or any Subsidiary. There are no outstanding securities or instruments of the Company or any Subsidiary that contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to redeem a security of the Company or such Subsidiary. The Company does not have any stock appreciation rights or "phantom stock" plans or agreements or any similar plan or agreement. All of the outstanding shares of capital stock of the Company are duly authorized, validly issued, fully paid and nonassessable, have been issued in compliance with all federal and state securities laws, and none of such outstanding shares was issued in violation of any preemptive rights or similar rights to subscribe for or purchase securities. No further approval or authorization of any stockholder, the Board of Directors or others is required for the issuance and sale of the Securities. There are no stockholders agreements, voting agreements or other similar agreements with respect to the Company's capital stock to which the Company is a party or, to the knowledge of the Company, between or among any of the Company's stockholders.

(h) SEC Reports; Financial Statements. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act and the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, for the two years preceding the date hereof (or such shorter period as the Company was required by law or regulation to file such material) (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, together with the Preliminary Prospectus and the Final Prospectus, being collectively referred to herein as the “SEC Reports”) on a timely basis or has received a valid extension of such time of filing and has filed any such SEC Reports prior to the expiration of any such extension. As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act. The financial statements of the Company included in the SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved (“GAAP”), except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Company and its consolidated Subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial, year-end audit adjustments.

(i) Material Changes; Undisclosed Events, Liabilities or Developments. Since the date of the latest unaudited financial statements included within the SEC Reports, except as set forth on Schedule 3.1(i), (i) there has been no event, occurrence or development that has had or that could reasonably be expected to result in a Material Adverse Effect, (ii) the Company has not incurred any liabilities (contingent or otherwise) other than (A) trade payables and accrued expenses incurred in the ordinary course of business consistent with past practice and (B) liabilities not required to be reflected in the Company’s financial statements pursuant to GAAP or disclosed in filings made with the Commission, (iii) the Company has not altered its method of accounting, (iv) the Company has not declared or made any dividend or distribution of cash or other property to its stockholders or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock and (v) the Company has not issued any equity securities to any officer, director or Affiliate, except pursuant to existing Company stock option plans. The Company does not have pending before the Commission any request for confidential treatment of information. Except for the issuance of the Securities contemplated by this Agreement or as set forth on Schedule 3.1(i), no event, liability, fact, circumstance, occurrence or development has occurred or exists or is reasonably expected to occur or exist with respect to the Company or its Subsidiaries or their respective businesses, prospects, properties, operations, assets or financial condition that would be required to be disclosed by the Company under applicable securities laws at the time this representation is made or deemed made that has not been publicly disclosed at least 1 Trading Day prior to the date that this representation is made.

(j) Litigation. Except as set forth on Schedule 3.1(j), there is no action, suit, inquiry, notice of violation, proceeding or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) (collectively, an “Action”). None of the Actions set forth on Schedule 3.1(j), (i) adversely affects or challenges the legality, validity or enforceability of any of the Transaction Documents or the Securities or (ii) could, if there were an unfavorable decision, have or reasonably be expected to result in a Material Adverse Effect. Neither the Company nor any Subsidiary, nor any director or officer thereof, is or has been the subject of any Action involving a claim of violation of or liability under federal or state securities laws or a claim of breach of fiduciary duty. There has not been, and to the knowledge of the Company, there is not pending or contemplated, any investigation by the Commission involving the Company or any current or former director or officer of the Company. The Commission has not issued any stop order or other order suspending the effectiveness of any registration statement filed by the Company or any Subsidiary under the Exchange Act or the Securities Act.

(k) Labor Relations. No labor dispute exists or, to the knowledge of the Company, is imminent with respect to any of the employees of the Company, which could reasonably be expected to result in a Material Adverse Effect. None of the Company’s or its Subsidiaries’ employees is a member of a union that relates to such employee’s relationship with the Company or such Subsidiary, and neither the Company nor any of its Subsidiaries is a party to a collective bargaining agreement, and the Company and its Subsidiaries believe that their relationships with their employees are good. To the knowledge of the Company, no executive officer of the Company or any Subsidiary, is, or is now expected to be, in violation of any material term of any employment contract, confidentiality, disclosure or proprietary information agreement or non-competition agreement, or any other contract or agreement or any restrictive covenant in favor of any third party, and the continued employment of each such executive officer does not subject the Company or any of its Subsidiaries to any liability with respect to any of the foregoing matters that would reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries are in compliance in all material respects with all U.S. federal, state, local and foreign laws and regulations relating to employment and employment practices, terms and conditions of employment and wages and hours, except where the failure to be in compliance could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(l) Compliance. Neither the Company nor any Subsidiary: (i) is in default under or in violation of (and no event has occurred that has not been waived that, with notice or lapse of time or both, would result in a default by the Company or any Subsidiary under), nor has the Company or any Subsidiary received written notice of a material claim that it is in default under or that it is in violation of, any indenture, loan or credit agreement or any other agreement or instrument to which it is a party or by which it or any of its properties is bound (whether or not such default or violation has been waived), (ii) is in violation of any judgment, decree or order of any court, arbitrator or other governmental authority or (iii) is or has been in violation of any statute, rule, ordinance or regulation of any governmental authority, including without limitation all foreign, federal, state and local laws relating to taxes, environmental protection, occupational health and safety, product quality and safety and employment and labor matters, except in each case as could not have or reasonably be expected to result in a Material Adverse Effect.

(m) Environmental Laws. The Company and its Subsidiaries (i) are in compliance in all material respects with all federal, state, local and foreign laws relating to pollution or protection of human health or the environment (including ambient air, surface water, groundwater, land surface or subsurface strata), including laws relating to emissions, discharges, releases or threatened releases of chemicals, pollutants, contaminants, or toxic or hazardous substances or wastes (collectively, "Hazardous Materials") into the environment, or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials, as well as all authorizations, codes, decrees, demands, or demand letters, injunctions, judgments, licenses, notices or notice letters, orders, permits, plans or regulations, issued, entered, promulgated or approved thereunder ("Environmental Laws"); (ii) have received all permits licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses; and (iii) are in compliance in all material respects with all terms and conditions of any such permit, license or approval, except where in each clause (i), (ii) and (iii), the failure to so comply could be reasonably expected to have, individually or in the aggregate, a Material Adverse Effect.

(n) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as described in the SEC Reports, except where the failure to possess such permits could not reasonably be expected to result in a Material Adverse Effect ("Material Permits"), and neither the Company nor any Subsidiary has received any notice of proceedings relating to the revocation or modification of any Material Permit.

(o) Property; Title to Assets.

(i) The Company or its Subsidiaries, as applicable, has legal, valid and marketable title to, or a valid leasehold interest in, all assets and properties reflected as owned or leased by it, as described in the Registration Statement and Prospectus, in each case free and clear of all liens, security interests, pledges, charges, encumbrances, encroachments, restrictions, mortgages and defects, except such as (i) are disclosed in the each of the Registration Statement and Prospectus or (ii) could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. Any real property, buildings, improvements, equipment or personal property held or to be held under lease by the Company or any Subsidiary is held under a lease that is valid, existing and enforceable by the Company or such Subsidiary, with such exceptions as (i) are disclosed in the Registration Statement and Prospectus or (ii) could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect, and neither the Company nor any Subsidiary has received any written notice of any material claim of any sort that has been asserted by anyone adverse to the rights of the Company or any Subsidiary under any such lease, except as could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect.

(ii) No tenant under any lease of the Company or any Subsidiary holds the lessor's interest (collectively, the "Leases") has an option, right of first offer or right of first refusal to purchase the premises demised under such Lease, except as such options, rights of first offer or rights of first refusal which, if exercised, would not reasonably be expected to have a Material Adverse Effect; neither the Company, any Subsidiary nor, to the Company's knowledge, any other party to any Lease is in breach of or default under any such Lease, except such as are disclosed in each of the Registration Statement and Prospectus or as could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect; to the Company's knowledge, no event has occurred, which with or without the passage of time or the giving of notice, or both, would, individually or together with all such other events, constitute a default under any Lease, or would permit termination, modification or acceleration under such Lease, except such as are disclosed in each of the Registration Statement and Prospectus or as could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect.

(iii) None of the Company or any Subsidiary has actual knowledge that any real property owned or leased by the Company or any Subsidiary fails to comply in all material respects with all applicable codes, laws and regulations (including, without limitation, building and zoning codes, laws and regulations and laws relating to access to such property), except as are disclosed in each of the Registration Statement and Prospectus or as could not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect.

(iv) The Company and the Subsidiaries have good and marketable title in all personal property owned by them that is material to the business of the Company and the Subsidiaries, in each case free and clear of all Liens, except for (i) Liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and the Subsidiaries and (ii) Liens for the payment of federal, state or other taxes, for which appropriate reserves have been made therefor in accordance with GAAP and, the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company and the Subsidiaries are held by them under valid, subsisting and enforceable leases with which the Company and the Subsidiaries are in compliance.

(p) Intellectual Property. The Company and the Subsidiaries have, or have rights to use, all patents, patent applications, trademarks, trademark applications, service marks, trade names, trade secrets, inventions, copyrights, licenses and other intellectual property rights and similar rights necessary or required for use in connection with their respective businesses as described in the SEC Reports and which the failure to so have could have a Material Adverse Effect (collectively, the "Intellectual Property Rights"). None of, and neither the Company nor any Subsidiary has received a notice (written or otherwise) that any of, the Intellectual Property Rights has expired, terminated or been abandoned, or is expected to expire or terminate or be abandoned, within two (2) years from the date of this Agreement except where such expiration, termination or abandonment would not reasonably be expected to have a Material Adverse Effect. Neither the Company nor any Subsidiary has received, since the date of the latest unaudited financial statements included within the SEC Reports, a written notice of a material claim or otherwise has any knowledge that the Intellectual Property Rights violate or infringe upon the rights of any Person, except as could not have or reasonably be expected to not have a Material Adverse Effect. To the knowledge of the Company, all such Intellectual Property Rights are enforceable and there is no existing infringement by another Person of any of the Intellectual Property Rights. The Company and its Subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their intellectual properties, except where failure to do so could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(q) Insurance. The Company and the Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are prudent and customary in the businesses in which the Company and the Subsidiaries are engaged, including, but not limited to, directors and officers insurance coverage of \$5 million. Neither the Company nor any Subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business without a significant increase in cost.

(r) Transactions With Affiliates and Employees. Except as described in the Prospectus, none of the officers or directors of the Company or any Subsidiary and, to the knowledge of the Company, none of the employees of the Company or any Subsidiary is presently a party to any transaction with the Company or any Subsidiary (other than for services as employees, officers and directors), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, providing for the borrowing of money from or lending of money to or otherwise requiring payments to or from any officer, director or such employee or, to the knowledge of the Company, any entity in which any officer, director, or any such employee has a substantial interest or is an officer, director, trustee, stockholder, member or partner, in each case in excess of \$120,000 other than for (i) payment of salary or consulting fees for services rendered, (ii) reimbursement for expenses incurred on behalf of the Company and (iii) other employee benefits, including stock option agreements under any stock option plan of the Company.

(s) Sarbanes-Oxley: Internal Accounting Controls. Except as described in the Prospectus, the Company and its Subsidiaries are in compliance in all material respects with any and all applicable requirements of the Sarbanes-Oxley Act of 2002, as amended, that are effective as of the date hereof, and any and all applicable rules and regulations promulgated by the Commission thereunder that are effective as of the date hereof and as of the Closing Date, as currently applicable to the Company (which takes into account the transition period established by the Commission for newly public companies, as provided in Instruction 1 to Item 308 of Regulation S-K under the Exchange Act). Except as described in the Prospectus, the Company and its Subsidiaries maintain a system of “internal control over financial reporting” (as defined under Rule 13a-15 and 15d-15 under the Exchange Act) that comply with the requirements of the Exchange Act and have been designed by, or under the supervision of, their respective principal executive and principal financial officers, or persons performing similar functions, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP, including, but not limited to: (i) transactions are executed in accordance with management’s general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management’s general or specific authorization, and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Except as disclosed in the Registration Statement and the Prospectus, the Company is not aware of any material weaknesses in its internal controls.

(t) Certain Fees. Except for fees payable by the Company to the Placement Agent, no brokerage or finder’s fees or commissions are or will be payable by the Company or any Subsidiary to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other Person with respect to the transactions contemplated by the Transaction Documents. The Purchasers shall have no obligation with respect to any fees or with respect to any claims made by or on behalf of other Persons for fees of a type contemplated in this Section that may be due in connection with the transactions contemplated by the Transaction Documents.

(u) Investment Company. The Company is not, and is not an Affiliate of, and immediately after receipt of payment for the Securities, will not be or be an Affiliate of, an “investment company” within the meaning of the Investment Company Act of 1940, as amended (the “1940 Act”). The Company shall conduct its business in a manner so that it will not become an “investment company” subject to registration under the 1940 Act.

(v) Registration Rights. Except as set forth on Schedule 3.1(v), no Person has any right to cause the Company or any Subsidiary to effect the registration under the Securities Act of any securities of the Company or any Subsidiary.

(w) Listing and Maintenance Requirements. The Common Stock is registered pursuant to Section 12(b) or 12(g) of the Exchange Act, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act nor has the Company received any notification that the Commission is contemplating terminating such registration. The Company has not, in the 12 months preceding the date hereof, received written notice from any Trading Market on which the Common Stock is or has been listed or quoted to the effect that the Company is not in compliance with the listing or maintenance requirements of such Trading Market. The Company is, and has no reason to believe that it will not in the foreseeable future continue to be, in compliance in all material respects with such listing and maintenance requirements. The Common Stock is currently eligible for electronic transfer through the Depository Trust Company or another established clearing corporation.

(x) Application of Takeover Protections. The Company and the Board of Directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company’s certificate of incorporation (or similar charter documents) or the laws of its state of incorporation that is or could become applicable to the Purchasers as a result of the Purchasers and the Company fulfilling their obligations or exercising their rights under the Transaction Documents, including without limitation as a result of the Company’s issuance of the Securities and the Purchasers’ ownership of the Securities.

(y) Disclosure. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, the Company confirms that neither it nor any other Person acting on its behalf has provided any of the Purchasers or their agents or counsel with any information that it believes constitutes or might constitute material, non-public information which is not otherwise disclosed in the Prospectus. The Company understands and confirms that the Purchasers will rely on the foregoing representation in effecting transactions in securities of the Company. All of the disclosure furnished by or on behalf of the Company to the Purchasers regarding the Company and its Subsidiaries, their respective businesses and the transactions contemplated hereby, including the Disclosure Schedules to this Agreement and the SEC Reports, is true and correct and does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. The press releases disseminated by the Company between January 24, 2024, and the date of this Agreement taken as a whole with the SEC Reports do not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made and when made, not misleading. The Company acknowledges and agrees that no Purchaser makes or has made any representations or warranties with respect to the transactions contemplated hereby other than those specifically set forth in Section 3.2 hereof.

(z) No Integrated Offering. Assuming the accuracy of the Purchasers' representations and warranties set forth in Section 3.2, neither the Company, nor any of its Affiliates, nor any Person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would cause this offering of the Securities to be integrated with prior offerings by the Company for purposes of any applicable shareholder approval provisions of any Trading Market on which any of the securities of the Company are listed or designated.

(aa) Solvency. Based on the consolidated financial condition of the Company as of the Closing Date, after giving effect to the receipt by the Company of the proceeds from the sale of the Securities hereunder, (i) the fair saleable value of the Company's assets exceeds the amount that will be required to be paid on or in respect of the Company's existing debts and other liabilities (including known contingent liabilities) as they mature, (ii) the Company's assets do not constitute unreasonably small capital to carry on its business as now conducted and as proposed to be conducted including its capital needs taking into account the particular capital requirements of the business conducted by the Company, consolidated and projected capital requirements and capital availability thereof, and (iii) the current cash flow of the Company, together with the proceeds the Company would receive, were it to liquidate all of its assets, after taking into account all anticipated uses of the cash, would be sufficient to pay all amounts on or in respect of its liabilities when such amounts are required to be paid. The Company does not intend to incur debts beyond its ability to pay such debts as they mature (taking into account the timing and amounts of cash to be payable on or in respect of its debt). The Company has no knowledge of any facts or circumstances which lead it to believe that it will file for reorganization or liquidation under the bankruptcy or reorganization laws of any jurisdiction within one year from the Closing Date. Schedule 3.1(aa) or the Prospectus sets forth as of the date hereof all outstanding secured and unsecured Indebtedness of the Company or any Subsidiary, or for which the Company or any Subsidiary has commitments. For the purposes of this Agreement, "Indebtedness" means (x) any liabilities for borrowed money or amounts owed in excess of \$50,000 (other than trade accounts payable incurred in the ordinary course of business), (y) all guaranties, endorsements and other contingent obligations in respect of indebtedness of others, whether or not the same are or should be reflected in the Company's consolidated balance sheet (or the notes thereto), except guaranties by endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business; and (z) the present value of any lease payments in excess of \$50,000 due under leases required to be capitalized in accordance with GAAP. Neither the Company nor any Subsidiary is in default with respect to any Indebtedness.

(bb) Tax Status. Except for matters that would not, individually or in the aggregate, have or reasonably be expected to result in a Material Adverse Effect, the Company and its Subsidiaries each (i) has made or filed all United States federal, state and local income and all foreign income and franchise tax returns, reports and declarations required by any jurisdiction to which it is subject, subject to permitted extensions (ii) has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations and (iii) has set aside on its books provision reasonably adequate for the payment of all material taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction, and the officers of the Company or of any Subsidiary know of no basis for any such claim.

(cc) Foreign Corrupt Practices. Neither the Company nor any Subsidiary, nor to the knowledge of the Company or any Subsidiary, any agent or other person acting on behalf of the Company or any Subsidiary, has (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution made by the Company or any Subsidiary (or made by any person acting on its behalf of which the Company is aware) which is in violation of law, or (iv) violated in any material respect any provision of FCPA.

(dd) Accountants. The Company's current accounting firm is set forth on Schedule 3.1(dd) of the Disclosure Schedules. To the knowledge and belief of the Company, such accounting firm is a registered public accounting firm as required by the Exchange Act and will express an opinion with respect to the financial statements to be included in the Company's Annual Report for the fiscal year ended December 31, 2024.

(ee) Acknowledgment Regarding Purchasers' Purchase of Securities. The Company acknowledges and agrees that each of the Purchasers is acting solely in the capacity of an arm's length purchaser with respect to the Transaction Documents and the transactions contemplated thereby. The Company further acknowledges that no Purchaser is acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the transactions contemplated thereby and any advice given by any Purchaser or any of their respective representatives or agents in connection with the Transaction Documents and the transactions contemplated thereby is merely incidental to the Purchasers' purchase of the Securities. The Company further represents to each Purchaser that the Company's decision to enter into this Agreement and the other Transaction Documents has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

(ff) Acknowledgment Regarding Purchaser's Trading Activity. Anything in this Agreement or elsewhere herein to the contrary notwithstanding (except for Sections 3.2(f) and 4.15 hereof), it is understood and acknowledged by the Company that: (i) none of the Purchasers has been asked by the Company to agree, nor has any Purchaser agreed, to desist from purchasing or selling, long and/or short, securities of the Company, or "derivative" securities based on securities issued by the Company or to hold the Securities for any specified term; (ii) past or future open market or other transactions by any Purchaser, specifically including, without limitation, Short Sales or "derivative" transactions, before or after the closing of this or future private placement transactions, may negatively impact the market price of the Company's publicly-traded securities; (iii) any Purchaser, and counter-parties in "derivative" transactions to which any such Purchaser is a party, directly or indirectly, presently may have a "short" position in the Common Stock, and (iv) each Purchaser shall not be deemed to have any affiliation with or control over any arm's length counter-party in any "derivative" transaction. The Company further understands and acknowledges that (y) one or more Purchasers may engage in hedging activities at various times during the period that the Securities are outstanding, including, without limitation, during the periods that the value of the Warrant Shares deliverable with respect to Securities are being determined, and (z) such hedging activities (if any) could reduce the value of the existing stockholders' equity interests in the Company at and after the time that the hedging activities are being conducted. The Company acknowledges that such aforementioned hedging activities do not constitute a breach of any of the Transaction Documents.

(gg) Regulation M Compliance. The Company has not, and to its knowledge no one acting on its behalf has, (i) taken, directly or indirectly, any action designed to cause or to result in the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of any of the Securities, (ii) sold, bid for, purchased, or, paid any compensation for soliciting purchases of, any of the Securities, or (iii) paid or agreed to pay to any Person any compensation for soliciting another to purchase any other securities of the Company, other than, in the case of clauses (ii) and (iii), compensation paid to the Placement Agent in connection with the placement of the Securities and compensation/fees paid pursuant to the GEM Agreement.

(hh) Stock Option Plans. Each stock option granted by the Company under the Company's stock option plan was granted (i) in accordance with the terms of the Company's stock option plan and (ii) with an exercise price at least equal to the fair market value of the Common Stock on the date such stock option would be considered granted under GAAP and applicable law. No stock option granted under the Company's stock option plan has been backdated. The Company has not knowingly granted, and there is no and has been no Company policy or practice to knowingly grant, stock options prior to, or otherwise knowingly coordinate the grant of stock options with, the release or other public announcement of material information regarding the Company or its Subsidiaries or their financial results or prospects.

(ii) Cybersecurity. (i)(x) There has been no security breach or other compromise of or relating to any of the Company's or any Subsidiary's information technology and computer systems, networks, hardware, software, data (including the data of its respective customers, employees, suppliers, vendors and any third party data maintained by or on behalf of it), equipment or technology (collectively, "IT Systems and Data") and (y) the Company and the Subsidiaries have not been notified of, and has no knowledge of any event or condition that would reasonably be expected to result in, any security breach or other material compromise to its IT Systems and Data; (ii) the Company and the Subsidiaries are presently in compliance in all material respects with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Data and to the protection of such IT Systems and Data from unauthorized use, access, misappropriation or modification, except as would not, individually or in the aggregate, have a Material Adverse Effect; (iii) the Company and the Subsidiaries have implemented and maintained commercially reasonable safeguards to maintain and protect its material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and Data; and (iv) the Company and the Subsidiaries have implemented backup and disaster recovery technology consistent with industry standards and practices.

(jj) Office of Foreign Assets Control. Neither the Company nor any Subsidiary nor, to the Company's knowledge, any director, officer, agent, employee or affiliate of the Company or any Subsidiary is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department ("OFAC").

(kk) Bank Holding Company Act. Neither the Company nor any of its Subsidiaries or Affiliates is subject to the Bank Holding Company Act of 1956, as amended (the "BHCA") and to regulation by the Board of Governors of the Federal Reserve System (the "Federal Reserve"). Neither the Company nor any of its Subsidiaries or Affiliates owns or controls, directly or indirectly, five percent (5%) or more of the outstanding shares of any class of voting securities or twenty-five percent or more of the total equity of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve. Neither the Company nor any of its Subsidiaries or Affiliates exercises a controlling influence over the management or policies of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve.

(ll) Money Laundering. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the "Money Laundering Laws"), and no Action or Proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company or any Subsidiary, threatened.

(mm) Compliance with Data Privacy Laws. (i) The Company and the Subsidiaries are, and at all times during the last three (3) years were, in compliance with all applicable state, federal and foreign data privacy and security laws and regulations, including, without limitation, the European Union General Data Protection Regulation ("GDPR") (EU 2016/679) (collectively, "Privacy Laws"); (ii) the Company and the Subsidiaries have in place, comply with, and take appropriate steps reasonably designed to ensure compliance with their policies and procedures relating to data privacy and security and the collection, storage, use, disclosure, handling and analysis of Personal Data (as defined below) (the "Policies"); (iii) the Company provides accurate notice of its applicable Policies to its customers, employees, third party vendors and representatives as required by the Privacy Laws; and (iv) applicable Policies provide accurate and sufficient notice of the Company's then-current privacy practices relating to its subject matter, and do not contain any material omissions of the Company's then-current privacy practices, as required by Privacy Laws. "Personal Data" means (i) a natural person's name, street address, telephone number, email address, photograph, social security number, bank information, or customer or account number; (ii) any information which would qualify as "personally identifying information" under the Federal Trade Commission Act, as amended; (iii) "personal data" as defined by GDPR; and (iv) any other piece of information that allows the identification of such natural person, or his or her family, or permits the collection or analysis of any identifiable data related to an identified person's health or sexual orientation. (i) None of such disclosures made or contained in any of the Policies have been inaccurate, misleading, or deceptive in violation of any Privacy Laws and (ii) the execution, delivery and performance of the Transaction Documents will not result in a breach of any Privacy Laws or Policies. Neither the Company nor the Subsidiaries (i) to the knowledge of the Company, has received written notice of any actual or potential liability of the Company or the Subsidiaries under, or actual or potential violation by the Company or the Subsidiaries of, any of the Privacy Laws; (ii) is currently conducting or paying for, in whole or in part, any investigation, remediation or other corrective action pursuant to any regulatory request or demand pursuant to any Privacy Law; or (iii) is a party to any order, decree, or agreement by or with any court or arbitrator or governmental or regulatory authority that imposed any obligation or liability under any Privacy Law.

3.2 Representations and Warranties of the Purchasers. Each Purchaser, for itself and for no other Purchaser, hereby represents and warrants as of the date hereof and as of the Closing Date to the Company as follows (unless as of a specific date therein, in which case they shall be accurate as of such date):

(a) Organization; Authority. Such Purchaser is either an individual or an entity duly incorporated or formed, validly existing and in good standing under the laws of the jurisdiction of its incorporation or formation with full right, corporate, partnership, limited liability company or similar power and authority to enter into and to consummate the transactions contemplated by the Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of the Transaction Documents and performance by such Purchaser of the transactions contemplated by the Transaction Documents have been duly authorized by all necessary corporate, partnership, limited liability company or similar action, as applicable, on the part of such Purchaser. Each Transaction Document to which it is a party has been duly executed by such Purchaser, and when delivered by such Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of such Purchaser, enforceable against it in accordance with its terms, except: (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

(b) Understandings or Arrangements. Such Purchaser is acquiring the Securities as principal for its own account and has no direct or indirect arrangement or understandings with any other persons to distribute or regarding the distribution of such Securities (this representation and warranty not limiting such Purchaser's right to sell the Securities pursuant to the Registration Statement or otherwise in compliance with applicable federal and state securities laws). Such Purchaser is acquiring the Securities hereunder in the ordinary course of its business.

(c) Purchaser Status. At the time such Purchaser was offered the Securities, it was, and as of the date hereof it is, and on each date on which it exercises any Warrants, it will be an "accredited investor" as defined in Rule 501(a)(1), (a)(2), (a)(3), (a)(7), (a)(8), (a)(9), (a)(12) or (a)(13) under the Securities Act.

(d) Experience of Such Purchaser. Such Purchaser, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. Such Purchaser is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

(e) Access to Information. Such Purchaser acknowledges that it has had the opportunity to review the Transaction Documents (including all exhibits and schedules thereto) and the SEC Reports and has been afforded, (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. Such Purchaser acknowledges and agrees that neither the Placement Agent nor any Affiliate of the Placement Agent has provided such Purchaser with any information or advice with respect to the Securities nor is such information or advice necessary or desired. Neither the Placement Agent nor any Affiliate has made or makes any representation as to the Company or the quality of the Securities and the Placement Agent and any Affiliate may have acquired non-public information with respect to the Company which such Purchaser agrees need not be provided to it. In connection with the issuance of the Securities to such Purchaser, neither the Placement Agent nor any of its Affiliates has acted as a financial advisor or fiduciary to such Purchaser.

(f) Certain Transactions and Confidentiality. Other than consummating the transactions contemplated hereunder, such Purchaser has not, nor has any Person acting on behalf of or pursuant to any understanding with such Purchaser, directly or indirectly executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that such Purchaser first received details regarding this transaction (written or oral) from the Company or any other Person representing the Company setting forth the material pricing terms of the transactions contemplated hereunder and ending when the transaction is first publicly announced. Notwithstanding the foregoing, in the case of a Purchaser that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's assets, the representation set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement. Other than to other Persons party to this Agreement or to such Purchaser's representatives, including, without limitation, its officers, directors, partners, legal and other advisors, employees, agents and Affiliates, such Purchaser has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

The Company acknowledges and agrees that the representations contained in this Section 3.2 shall not modify, amend or affect such Purchaser's right to rely on the Company's representations and warranties contained in this Agreement or any representations and warranties contained in any other Transaction Document or any other document or instrument executed and/or delivered in connection with this Agreement or the consummation of the transactions contemplated hereby. Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

ARTICLE IV.
OTHER AGREEMENTS OF THE PARTIES

4.1 No Legends. The Shares, Warrants, and Warrant Shares shall be issued free of legends. If all or any portion of a Warrant is exercised at a time when there is an effective registration statement to cover the issuance or resale of the Warrant Shares or if the Warrant is exercised via cashless exercise, the Warrant Shares issued pursuant to any such exercise shall be issued free of all legends. If at any time following the date hereof the Registration Statement (or any subsequent registration statement registering the sale or resale of the Warrant Shares) is not effective or is not otherwise available for the sale or resale of the Warrant Shares, the Company shall immediately notify the holders of the Warrants in writing that such registration statement is not then effective and thereafter shall promptly notify such holders when the registration statement is effective again and available for the sale or resale of the Warrant Shares (it being understood and agreed that the foregoing shall not limit the ability of the Company to issue, or any Purchaser to sell, any of the Warrant Shares in compliance with applicable federal and state securities laws). The Company shall use best efforts to keep a registration statement (including the Registration Statement) registering the issuance or resale of the Warrant Shares effective during the term of the Warrants.

4.2 Furnishing of Information. Until the earlier of the time that (i) no Purchaser owns Securities or (ii) the Warrants have expired, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act even if the Company is not then subject to the reporting requirements of the Exchange Act.

4.3 Integration. The Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that would be integrated with the offer or sale of the Securities for purposes of the rules and regulations of any Trading Market such that it would require shareholder approval prior to the closing of such other transaction unless shareholder approval is obtained before the closing of such subsequent transaction.

4.4 Securities Laws Disclosure: Publicity. The Company shall (a) by the Disclosure Time, issue a press release disclosing the material terms of the transactions contemplated hereby, and (b) file a Current Report on Form 8-K, including the Transaction Documents as exhibits thereto, with the Commission within the time required by the Exchange Act. From and after the issuance of such press release, the Company represents to the Purchasers that it shall have publicly disclosed all material, non-public information delivered to (i) any of the Purchasers by the Company or any of its Subsidiaries, or (ii) any of the Purchasers' respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, in connection with the transactions contemplated by the Transaction Documents. In addition, effective upon the issuance of such press release, the Company acknowledges and agrees that any and all confidentiality or similar obligations under any agreement, whether written or oral, between (i) the Company, any of its Subsidiaries or any of their respective officers, directors, employees, Affiliates or agents, on the one hand, and (ii) any of the Purchasers or any of their Affiliates on the other hand, shall terminate and be of no further force or effect. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company. Notwithstanding the foregoing, the Company shall not publicly disclose the name of any Purchaser, or include the name of any Purchaser in any filing with the Commission or any regulatory agency or Trading Market, without the prior written consent of such Purchaser, except (a) as required by federal securities law in connection with the filing of final Transaction Documents with the Commission, and (b) to the extent such disclosure is required by other law or Trading Market regulations, in which case the Company shall, in connection with such disclosure under clause (b), provide the Purchasers with prior notice of such disclosure and reasonably cooperate with such Purchaser regarding such disclosure.

4.5 Shareholder Rights Plan. No claim will be made or enforced by the Company or, with the consent of the Company, any other Person, that any Purchaser is an "Acquiring Person" under any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or similar anti-takeover plan or arrangement in effect or hereafter adopted by the Company, or that any Purchaser could be deemed to trigger the provisions of any such plan or arrangement, by virtue of receiving Securities under the Transaction Documents or under any other agreement between the Company and the Purchasers.

4.6 Non-Public Information. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, which shall be disclosed pursuant to Section 4.4, the Company covenants and agrees that neither it, nor any other Person acting on its behalf will provide any Purchaser or its agents or counsel with any information that constitutes, or the Company reasonably believes constitutes, material non-public information, unless prior thereto such Purchaser shall have consented in writing to the receipt of such information and agreed in writing with the Company to keep such information confidential. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company. To the extent that the Company, any of its Subsidiaries, or any of their respective officers, directors, agents, employees or Affiliates delivers any material, non-public information to a Purchaser without such Purchaser's consent, the Company hereby covenants and agrees that such Purchaser shall not have any duty of confidentiality to the Company, any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, or a duty to the Company, any of its Subsidiaries or any of their respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, not to trade on the basis of, such material, non-public information, provided that the Purchaser shall remain subject to applicable law. To the extent that any notice provided pursuant to any Transaction Document constitutes, or contains, material, non-public information regarding the Company or any Subsidiaries, the Company shall simultaneously with the delivery of such notice file such notice with the Commission pursuant to a Current Report on Form 8-K. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company.

4.7 Use of Proceeds. The Company shall use the net proceeds from the sale of the Securities hereunder as set forth in the Prospectus and shall not use such proceeds: (a) for the satisfaction of any portion of the Company's debt (other than payment of trade payables in the ordinary course of the Company's business and prior practices), (b) for the redemption of any Common Stock or Common Stock Equivalents, (c) for the settlement of any outstanding litigation or (d) in violation of FCPA or OFAC regulations.

4.8 Indemnification of Purchasers. Subject to the provisions of this Section 4.8, the Company will indemnify and hold each Purchaser and its directors, officers, shareholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls such Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling persons (each, a "Purchaser Party") harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts paid in settlements, court costs and reasonable attorneys' fees and costs of investigation that any such Purchaser Party may suffer or incur as a result of or relating to (a) any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (b) any action instituted against the Purchaser Parties in any capacity, or any of them or their respective Affiliates, by any stockholder of the Company who is not an Affiliate of such Purchaser Party, with respect to any of the transactions contemplated by the Transaction Documents (unless such action is solely based upon a material breach of such Purchaser Party's representations, warranties or covenants under the Transaction Documents or any agreements or understandings such Purchaser Party may have with any such stockholder or any violations by such Purchaser Party of state or federal securities laws or any conduct by such Purchaser Party which is finally judicially determined to constitute fraud, gross negligence or willful misconduct. If any action shall be brought against any Purchaser Party in respect of which indemnity may be sought pursuant to this Agreement, such Purchaser Party shall promptly notify the Company in writing, and, the Company shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to the Purchaser Party. Any Purchaser Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Purchaser Party except to the extent that (i) the employment thereof has been specifically authorized by the Company in writing, (ii) the Company has failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable opinion of counsel a material conflict on any material issue between the position of the Company and the position of such Purchaser Party, in which case the Company shall be responsible for the reasonable fees and expenses of no more than one such separate counsel. The Company will not be liable to any Purchaser Party under this Agreement (y) for any settlement by a Purchaser Party effected without the Company's prior written consent, which shall not be unreasonably withheld or delayed; or (z) to the extent, but only to the extent that a loss, claim, damage or liability is attributable to any Purchaser Party's breach of any of the representations, contained within the Transaction Documents. The indemnification required by this Section 4.8 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or are incurred. The indemnity agreements contained herein shall be in addition to any cause of action or similar right of any Purchaser Party against the Company or others and any liabilities the Company may be subject to pursuant to law.

4.9 Reservation of Common Stock. As of the date hereof, the Company has reserved and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue Shares pursuant to this Agreement and Warrant Shares pursuant to any exercise of the Warrants.

4.10 Listing of Common Stock. The Company hereby agrees to use best efforts to maintain the listing or quotation of the Common Stock on the Trading Market on which it is currently listed, and concurrently with the Closing, the Company shall apply to list or quote all of the Shares and Warrant Shares on such Trading Market and promptly secure the listing of all of the Shares and Warrant Shares on such Trading Market. The Company further agrees, if the Company applies to have the Common Stock traded on any other Trading Market, it will then include in such application all of the Shares and Warrant Shares, and will take such other action as is necessary to cause all of the Shares and Warrant Shares to be listed or quoted on such other Trading Market as promptly as possible. The Company will then take all action reasonably necessary to continue the listing and trading of its Common Stock on a Trading Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market. The Company agrees to maintain the eligibility of the Common Stock for electronic transfer through the Depository Trust Company or another established clearing corporation, including, without limitation, by timely payment of fees to the Depository Trust Company or such other established clearing corporation in connection with such electronic transfer.

4.11 Subsequent Equity Sales.

(a) From the date hereof until ninety (90) days after the earlier of (i) a Closing Date and (ii) May 31, 2024, neither the Company nor any Subsidiary shall (i) issue, enter into any agreement to issue or announce the issuance or proposed issuance of any Common Stock or Common Stock Equivalents; or (ii) file any registration statement or amendment or supplement thereto, other than (a) the Prospectus or filing a registration statement on Form S-8 in connection with any employee benefit plan, (b) a post-effective amendment to the Company's registration statement on Form S-1 (File No. 333-275361), and (c) a registration statement on Form S-1, or any amendment or supplement thereto, in connection with the transactions contemplated by the GEM Agreement, in each case without the prior written consent of the Placement Agent; provided, however, that the Company shall not file publicly a registration statement on Form S-1 related to the GEM Agreement until thirty (30) days after the earlier of (i) a Closing Date and (ii) May 31, 2024.

(b) Notwithstanding the foregoing, this Section 4.11, other than the prohibition on filing publicly a registration statement on Form S-1 related to the GEM Agreement until thirty (30) days after the earlier of (i) a Closing Date and (ii) May 31, 2024, shall not apply in respect of an Exempt Issuance, except that no Variable Rate Transaction (other than issuances pursuant to the GEM Agreement, which are Exempt Issuances) shall be an Exempt Issuance.

4.12 Equal Treatment of Purchasers. No consideration (including any modification of any Transaction Document) shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of the Transaction Documents unless the same consideration is also offered to all of the parties to the Transaction Documents. For clarification purposes, this provision constitutes a separate right granted to each Purchaser by the Company and negotiated separately by each Purchaser, and is intended for the Company to treat the Purchasers as a class and shall not in any way be construed as the Purchasers acting in concert or as a group with respect to the purchase, disposition or voting of Securities or otherwise.

4.13 Certain Transactions and Confidentiality. Each Purchaser, severally and not jointly with the other Purchasers, covenants that neither it nor any Affiliate acting on its behalf or pursuant to any understanding with it will execute any purchases or sales, including Short Sales of any of the Company's securities during the period commencing with the execution of this Agreement and ending at such time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4. Each Purchaser, severally and not jointly with the other Purchasers, covenants that until such time as the transactions contemplated by this Agreement are publicly disclosed by the Company pursuant to the initial press release as described in Section 4.4, such Purchaser will maintain the confidentiality of the existence and terms of this transaction and the information included in the Disclosure Schedules (other than as disclosed to its legal and other representatives). Notwithstanding the foregoing and notwithstanding anything contained in this Agreement to the contrary, the Company expressly acknowledges and agrees that (i) no Purchaser makes any representation, warranty or covenant hereby that it will not engage in effecting transactions in any securities of the Company after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4, (ii) no Purchaser shall be restricted or prohibited from effecting any transactions in any securities of the Company in accordance with applicable securities laws from and after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4 and (iii) no Purchaser shall have any duty of confidentiality or duty not to trade in the securities of the Company to the Company, any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates or agent, including, without limitation, the Placement Agent, after the issuance of the initial press release as described in Section 4.4. Notwithstanding the foregoing, in the case of a Purchaser that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's assets, the covenant set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement.

4.14 Exercise Procedures. The form of Notice of Exercise included in the Warrants set forth the totality of the procedures required of the Purchasers in order to exercise the Warrants. No additional legal opinion, other information or instructions shall be required of the Purchasers to exercise their Warrants. Without limiting the preceding sentences, no ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise form be required in order to exercise the Warrants. The Company shall honor exercises of the Warrants and shall deliver Warrant Shares in accordance with the terms, conditions and time periods set forth in the Transaction Documents.

4.15 Lock-Up Agreements. The Company shall not amend, modify, waive or terminate any provision of any of the Lock-Up Agreements except to extend the term of the lock-up period and shall enforce the provisions of each Lock-Up Agreement in accordance with its terms. If any party to a Lock-Up Agreement breaches any provision of a Lock-Up Agreement, the Company shall promptly use its commercially reasonable efforts to seek specific performance of the terms of such Lock-Up Agreement.

ARTICLE V.
MISCELLANEOUS

5.1 Termination. This Agreement may be terminated by any Purchaser, as to such Purchaser's obligations hereunder only and without any effect whatsoever on the obligations between the Company and the other Purchasers, by written notice to the Company, if the Closing has not been consummated on or before the fifth (5th) Trading Day following the date hereof; provided, however, that no such termination will affect the right of any party to sue for any breach by any other party (or parties).

5.2 Fees and Expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, counsel, accountants and other experts, if any, and all other expenses incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement. The Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company and any exercise notice delivered by a Purchaser), stamp taxes and other taxes and duties levied in connection with the delivery of any Securities to the Purchasers.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, the Prospectus and the Prospectus Supplement, contain the entire understanding of the parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules.

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of: (a) the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto at or prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the second (2nd) Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

5.5 Amendments; Waivers. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Company and Purchasers which purchased at least 50.1% in interest of the Shares based on the initial Subscription Amounts hereunder (or, prior to the Closing, the Company and each Purchaser) or, in the case of a waiver, by the party against whom enforcement of any such waived provision is sought, provided that if any amendment, modification or waiver disproportionately and adversely impacts a Purchaser (or group of Purchasers), the consent of such disproportionately impacted Purchaser (or group of Purchasers) shall also be required. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right. Any proposed amendment or waiver that disproportionately, materially and adversely affects the rights and obligations of any Purchaser relative to the comparable rights and obligations of the other Purchasers shall require the prior written consent of such adversely affected Purchaser. Any amendment effected in accordance with this Section 5.5 shall be binding upon each Purchaser and holder of Securities and the Company.

5.6 Headings. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of each Purchaser (other than by merger). Any Purchaser may assign any or all of its rights under this Agreement to any Person to whom such Purchaser assigns or transfers any Securities, provided that such transferee agrees in writing to be bound, with respect to the transferred Securities, by the provisions of the Transaction Documents that apply to the “Purchasers.”

5.8 No Third-Party Beneficiaries. The Placement Agent shall be the third party beneficiary of the representations, warranties, and covenants of the Company in this Agreement and the representations, warranties, and covenants of the Purchasers in this Agreement. This Agreement is intended for the benefit of the parties hereto and their respective successors and permitted assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other Person, except as otherwise set forth in Section 4.8 and this Section 5.8.

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal Proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any Action or Proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such Action or Proceeding is improper or is an inconvenient venue for such Proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such Action or Proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If any party shall commence an Action or Proceeding to enforce any provisions of the Transaction Documents, then, in addition to the obligations of the Company under Section 4.8, the prevailing party in such Action or Proceeding shall be reimbursed by the non-prevailing party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such Action or Proceeding.

5.10 Survival. The representations and warranties contained herein shall survive the Closing and the delivery of the Securities.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by e-mail delivery of a ".pdf" format data file (including any electronic signature covered by the U.S. federal ESIGN Act of 2000, Uniform Electronic Transaction Act, the Electronic Signatures and Records Act or other applicable law, e.g., www.docuSign.com), such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such ".pdf" signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

5.13 Rescission and Withdrawal Right. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) any of the other Transaction Documents, whenever any Purchaser exercises a right, election, demand or option under a Transaction Document and the Company does not timely perform its related obligations within the periods therein provided, then such Purchaser may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights; provided, however, that in the case of a rescission of an exercise of a Warrant, the applicable Purchaser shall be required to return any shares of Common Stock subject to any such rescinded exercise notice concurrently with the return to such Purchaser of the aggregate exercise price paid to the Company for such shares and the restoration of such Purchaser's right to acquire such shares pursuant to such Purchaser's Warrant (including, issuance of a replacement warrant certificate evidencing such restored right).

5.14 Replacement of Securities. If any certificate or instrument evidencing any Securities is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof (in the case of mutilation), or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction. The applicant for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs (including customary indemnity) associated with the issuance of such replacement Securities.

5.15 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, each of the Purchasers and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agree to waive and not to assert in any Action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.16 Payment Set Aside. To the extent that the Company makes a payment or payments to any Purchaser pursuant to any Transaction Document or a Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other Person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.17 Independent Nature of Purchasers' Obligations and Rights. The obligations of each Purchaser under any Transaction Document are several and not joint with the obligations of any other Purchaser, and no Purchaser shall be responsible in any way for the performance or non-performance of the obligations of any other Purchaser under any Transaction Document. Nothing contained herein or in any other Transaction Document, and no action taken by any Purchaser pursuant hereto or thereto, shall be deemed to constitute the Purchasers as a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Purchasers are in any way acting in concert or as a group with respect to such obligations or the transactions contemplated by the Transaction Documents. Each Purchaser shall be entitled to independently protect and enforce its rights including, without limitation, the rights arising out of this Agreement or out of the other Transaction Documents, and it shall not be necessary for any other Purchaser to be joined as an additional party in any Proceeding for such purpose. Each Purchaser has been represented by its own separate legal counsel in its review and negotiation of the Transaction Documents. For reasons of administrative convenience only, each Purchaser and its respective counsel have chosen to communicate with the Company through Thompson Hine LLP. Thompson Hine LLP does not represent any of the Purchasers and only represents the Placement Agent. The Company has elected to provide all Purchasers with the same terms and Transaction Documents for the convenience of the Company and not because it was required or requested to do so by any of the Purchasers. It is expressly understood and agreed that each provision contained in this Agreement and in each other Transaction Document is between the Company and a Purchaser, solely, and not between the Company and the Purchasers collectively and not between and among the Purchasers.

5.18 Liquidated Damages. The Company's obligations to pay any partial liquidated damages or other amounts owing under the Transaction Documents is a continuing obligation of the Company and shall not terminate until all unpaid partial liquidated damages and other amounts have been paid notwithstanding the fact that the instrument or security pursuant to which such partial liquidated damages or other amounts are due and payable shall have been canceled.

5.19 Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

5.20 Construction. The parties agree that each of them and/or their respective counsel have reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments thereto. In addition, each and every reference to share prices and shares of Common Stock in any Transaction Document shall be subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement.

5.21 WAIVER OF JURY TRIAL. IN ANY ACTION, SUIT, OR PROCEEDING IN ANY JURISDICTION BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY, THE PARTIES EACH KNOWINGLY AND INTENTIONALLY, TO THE GREATEST EXTENT PERMITTED BY APPLICABLE LAW, HEREBY ABSOLUTELY, UNCONDITIONALLY, IRREVOCABLY AND EXPRESSLY WAIVES FOREVER TRIAL BY JURY.

(Signature Pages Follow)

IN WITNESS WHEREOF, the parties hereto have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

FIBROBIOLOGICS, INC.

Address for Notice:
FibroBiologics, Inc.
455 E. Medical Center Blvd., Suite 300
Houston, Texas 77598

By: _____
Name: Pete O'Heeron
Title: Chief Executive officer

With a copy to (which shall not constitute notice):
Norton Rose Fulbright US LLP
1301 McKinney, Suite 5100
Houston, Texas 77010-3095
Attention: Brian P. Fenske
E-Mail: brian.fenske@nortonrosefulbright.com

E-Mail: contracts@fibrobiologics.com

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGES FOR PURCHASERS FOLLOW]

PURCHASER SIGNATURE PAGES TO FBLG SECURITIES PURCHASE AGREEMENT

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: _____

Signature of Authorized Signatory of Purchaser: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Email Address of Authorized Signatory: _____

Address for Notice to Purchaser:

Address for Delivery of Securities to Purchaser (if not same as address for notice):

Unit Subscription Amount: \$ _____

Shares: _____

Warrant Shares: _____ Beneficial Ownership Blocker 4.99% or 9.99%

EIN Number: _____

Notwithstanding anything contained in this Agreement to the contrary, by checking this box (i) the obligations of the above-signed to purchase the securities set forth in this Agreement to be purchased from the Company by the above-signed, and the obligations of the Company to sell such securities to the above-signed, shall be unconditional and all conditions to Closing shall be disregarded, (ii) the Closing shall occur on the second (2nd) Trading Day following the date of this Agreement and (iii) any condition to Closing contemplated by this Agreement (but prior to being disregarded by clause (i) above) that required delivery by the Company or the above-signed of any agreement, instrument, certificate or the like or purchase price (as applicable) shall no longer be a condition and shall instead be an unconditional obligation of the Company or the above-signed (as applicable) to deliver such agreement, instrument, certificate or the like or purchase price (as applicable) to such other party on the Closing Date.

[SIGNATURE PAGES CONTINUE]

EXHIBIT A

FORM OF LOCK-UP AGREEMENT

April [●], 2024

Maxim Group LLC
300 Park Ave, 16th Floor
New York, NY 10022

Re: Placement of FibroBiologics, Inc.

Ladies and Gentlemen:

The undersigned, a holder of securities of FibroBiologics, Inc., a Delaware corporation (the “**Company**”), understands that you are the placement agent (the “**Placement Agent**”) named in the Placement Agency Agreement, dated as of April [●], 2024 (the “**Placement Agreement**”), by and between the Placement Agent and the Company, providing for the placement (the “**Placement**”) of units (the “**Units**”) of the Company, each Unit consisting of one share of the Company’s common stock (the “**Offered Shares**”), par value \$0.00001 per share (the “**Common Stock**”), and one common warrant to purchase one share of Common Stock (the “**Warrants**”), and the Common Stock underlying the Warrants, the “**Warrant Shares**” and together with the Offered Shares, the “**Securities**”) pursuant to a registration statement and related prospectuses and supplements thereto filed or to be filed with the U.S. Securities and Exchange Commission (the “**SEC**”). Capitalized terms used herein and not otherwise defined shall have the meanings set forth for them in the Placement Agreement.

In consideration of the Placement Agent’s agreement to proceed with the Placement of the Securities, and for other good and valuable consideration, receipt of which is hereby acknowledged, the undersigned hereby agrees, for the benefit of the Company and the Placement Agent that, without the prior written consent of the Placement Agent, the undersigned will not, during the period specified in the following paragraph (the “**Lock-Up Period**”), directly or indirectly, unless otherwise provided herein, (a) offer, sell, agree to offer or sell, solicit offers to purchase, convert, exercise, exchange, grant any call option or purchase any put option with respect to, pledge, encumber, assign, borrow or otherwise dispose of or transfer (each a “**Transfer**”) any Relevant Security (as defined below) or otherwise publicly disclose the intention to do so, or (b) establish or increase any “put equivalent position” or liquidate or decrease any “call equivalent position” (in each case within the meaning of Section 16 of the Securities Exchange Act of 1934 (the “**Exchange Act**”) and the rules and regulations thereunder) with respect to any Relevant Security or otherwise enter into any swap, derivative or other transaction or arrangement that Transfers to another, in whole or in part, any economic consequence of ownership of a Relevant Security, whether or not such transaction is to be settled by the delivery of Relevant Securities, other securities, cash or other consideration, or otherwise publicly disclose the intention to do so. As used herein, the term “**Relevant Security**” means any share (“**Share**”) of Common Stock, warrant to purchase Shares or any other security of the Company or any other entity that is convertible into, or exercisable or exchangeable for, Shares or any other equity security of the Company, in each case owned beneficially or otherwise by the undersigned on the date set forth on the front cover of the final prospectus used in connection with the Placement of the Securities (the “**Effective Date**”) or acquired by the undersigned during the Lock-Up Period.

The Lock-Up Period will commence on the date of this Lock-up Agreement and continue and include the date that is ninety (90) days after the final closing of the Placement.

Notwithstanding the foregoing, the undersigned may transfer the undersigned's Relevant Securities:

- (i) as a *bona fide* gift or gifts,
 - (ii) to an immediate family member or to any trust, limited partnership, limited liability company or other entity for the direct or indirect benefit of the undersigned or a member or members of the immediate family of the undersigned,
 - (iii) if the undersigned is a corporation, partnership, limited liability company, trust or other business entity, (1) to another corporation, partnership, limited liability company, trust or other business entity that is a direct or indirect affiliate (as defined in Rule 405 under the Securities Act of 1933) of the undersigned, (2) to limited partners, limited liability company members or stockholders of the undersigned, or (3) in connection with a sale, merger or transfer of all or substantially all of the assets of the undersigned or any other change of control of the undersigned, not undertaken for the purpose of avoiding the restrictions imposed by this Lock-Up Agreement,
 - (iv) if the undersigned is a trust, to the beneficiary of such trust,
 - (v) by testate or intestate succession,
 - (vi) to the Company upon the exercise of warrants or the exercise of stock options granted pursuant to the Company's stock options/incentive plans or otherwise outstanding on the date hereof, *provided*, that the restrictions shall apply to the Relevant Securities issued upon such exercise or conversion,
 - (vii) to satisfy tax withholding obligations in connection with the vesting or exercise of awards granted pursuant to the Company's stock option/incentive plans,
 - (viii) pursuant to a bona fide third party tender offer made to all holders of Shares, merger, consolidation or other similar transaction involving a change of control of the Company, including voting in favor of any such transaction or taking any other action in connection with such transaction (for purposes of this clause, "change of control" means the consummation of any bona fide third party tender offer, merger, purchase, consolidation or other similar transaction the result of which is that any "person" as defined in Section 13(d)(3) of the Exchange Act), or group of persons, becomes the beneficial owner (as defined in Rule 13d-3 and 13d-5 of the Exchange Act) of a majority of total voting power of the voting stock of the Company),
-

(ix) by operation of law, such as pursuant to a qualified domestic order or in connection with a divorce settlement,

provided, in the case of clauses (i)-(v), that (A) such transfer shall not involve a disposition for value, and (B) the transferee agrees in writing with the Placement Agent and the Company to be bound by the terms of this Lock-Up Agreement.

For purposes of this Lock-Up Agreement, “**immediate family**” shall mean any relationship by blood, marriage or adoption, not more remote than first cousin.

Notwithstanding the restrictions imposed by this Lock-Up Agreement, the undersigned may establish a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of any Relevant Security, provided that such plan does not provide for any transfers of Relevant Securities during the Lock-Up Period.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Lock-Up Agreement and that this Lock-Up Agreement has been duly authorized (if the undersigned is not a natural person) and constitutes the legal, valid and binding obligation of the undersigned, enforceable in accordance with its terms. Upon request, the undersigned will execute any additional documents necessary in connection with the enforcement hereof. Any obligations of the undersigned shall be binding upon the successors and assigns of the undersigned from the date of this Lock-Up Agreement.

Notwithstanding anything to the contrary contained herein, this Lock-Up Agreement will automatically terminate and the undersigned shall be released from all obligations under this Lock-Up Agreement upon the earliest to occur, if any, of (i) the registration statement relating to the placement of the Securities is withdrawn, (ii) the Placement Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Securities to be sold thereunder, or (iii) May 31, 2024, if a Closing has not occurred by such time.

The undersigned, whether or not participating in the Placement, understands that the Placement Agent is proceeding with the Placement in reliance upon this Lock-Up Agreement.

This Lock-Up Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to the conflict of laws principles thereof. Delivery of a signed copy of this Lock-Up Agreement by facsimile or e-mail/.pdf transmission (including any electronic signature covered by the U.S. federal ESIGN Act of 2000, Uniform Electronic Transaction Act, the Electronic Signatures and Records Act or other applicable law) shall be effective as the delivery of the original hereof.

Very truly yours,

Signature: _____
Name (printed): _____
Title (if applicable): _____
Entity (if applicable): _____



EXHIBIT B

FORM OF WARRANT

(see attached)

FIBROBIOLOGICS, INC.

and

VSTOCK TRANSFER LLC, as
Warrant Agent

Warrant Agency Agreement

Dated as of _____, 2024

WARRANT AGENCY AGREEMENT

WARRANT AGENCY AGREEMENT, dated as of _____, 2024 (“Agreement”), by and between FibroBiologics, Inc., a Delaware corporation (the “Company”), and VStock Transfer LLC, a New York limited liability trust company (“VStock” or the “Warrant Agent”).

WITNESSETH

WHEREAS, pursuant to an offering by the Company of Units (the “Offering”), with each Unit consisting of one share of common stock of the Company, par value \$0.00001 per share (the “Common Stock”) and one warrant (the “Warrants”), each whole Warrant to purchase one share of Common Stock and the shares of Common Stock issuable upon exercise of the Warrants, (the “Warrant Shares”);

WHEREAS, upon the terms and subject to the conditions hereinafter set forth and pursuant to an effective registration statement on Form S-1, as amended (File No. 333-_____) (the “Registration Statement”), and the terms and conditions of the Warrant Certificate (as defined below) the Company wishes to issue Warrants in book entry form entitling the respective holders of the Warrants (the “Holder”), which term shall include a Holder’s transferees, successors and assigns and “Holder” shall include, if the Warrants are held in “street name”, a Participant (as defined below) or a designee appointed by such Participant); and

WHEREAS, the Company wishes the Warrant Agent to act on behalf of the Company, and the Warrant Agent is willing to act, in connection with the issuance, registration, transfer, exchange, exercise and replacement of the Warrants and in the Warrant Agent’s capacity as the Company’s transfer agent, the delivery of the Warrant Shares.

NOW, THEREFORE, in consideration of the premises and the mutual agreements herein set forth, the parties hereby agree as follows:

Section 1. Certain Definitions. For purposes of this Agreement, the following terms have the meanings indicated:

- (a) “Affiliate” has the meaning ascribed to it in Rule 12b-2 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”).
- (b) “Business Day” means any day except any Saturday, any Sunday, any day which is a federal legal holiday in the United States or any day on which the Nasdaq Stock Market is authorized or required by law or other governmental action to close.
- (c) “Close of Business” on any given date means 5:00 p.m., New York City time, on such date; provided, however, that if such date is not a Business Day, it means 5:00 p.m., New York City time, on the next succeeding Business Day.
- (e) “Person” means an individual, corporation, association, partnership, limited liability company, joint venture, trust, unincorporated organization, government or political subdivision thereof or governmental agency or other entity.
- (f) “Warrant Certificate” means a certificate in substantially the form attached as Exhibit 1-A (as it relates to the Warrants) hereto, representing such number of Warrant Shares (as defined below) as is indicated therein, provided that any reference to the delivery of a Warrant Certificate in this Agreement shall include delivery of notice from the Depository or a Participant (each as defined below) of the transfer or exercise of the Warrant in the form of a Global Warrant (as defined below).

All other capitalized terms used but not otherwise defined herein shall have the meaning ascribed to such terms in the Warrant Certificate.

Section 2. Appointment of Warrant Agent. The Company hereby appoints the Warrant Agent to act as agent for the Company in accordance with the express terms or conditions hereof (and no implied terms and conditions), and the Warrant Agent hereby accepts such appointment.

Section 3. Global Warrants.

(a) The Warrants shall be issuable in book entry form. All of the Warrants shall initially be represented by one or more Global Warrants (the “Global Warrants” and, each, a “Global Warrant”), deposited with the Warrant Agent and registered in the name of Cede & Co., a nominee of The Depository Trust Company (the “Depository”), or as otherwise directed by the Depository. Ownership of beneficial interests in the Warrants, shall be shown on, and the transfer of such ownership shall be effected through, records maintained by (i) the Depository or its nominee for each Global Warrant or (ii) institutions that have accounts with the Depository (such institution, with respect to a Warrant in its account, a “Participant”). For purposes of Regulation SHO, a holder whose interest in a Global Warrant is a beneficial interest in certificate(s) representing such Warrant held in book-entry form through the Depository shall be deemed to have exercised its interest in such Warrant upon instructing its broker that is a Participant to exercise its interest in such Warrant, provided that in each such case payment of the applicable aggregate Exercise Price (other than in the case of a cashless exercise) is delivered by such Participant within the earlier of (i) two trading days and (ii) the number of trading days comprising the Standard Settlement Period, in each case following such instruction. As used herein, “Standard Settlement Period” means the standard settlement period, expressed in a number of trading days, on the Company’s primary trading market with respect to the Common Stock as in effect on the date of delivery of the Exercise Notice.

(b) If the Depository subsequently ceases to make its book-entry settlement system available for the Warrants, the Company may instruct the Warrant Agent regarding other arrangements for book-entry settlement. In the event that the Warrants are not eligible for, or it is no longer necessary to have the Warrants available in, book-entry form, the Warrant Agent shall provide written instructions to the Depository to deliver to the Warrant Agent for cancellation each Global Warrant, and the Company shall instruct the Warrant Agent in writing to deliver to each Holder a Warrant Certificate.

(c) A Holder has the right to elect at any time or from time to time a Warrant Exchange (as defined below) pursuant to a Warrant Certificate Request Notice (as defined below). Upon written notice by a Holder to the Warrant Agent for the exchange of some or all of such Holder’s Global Warrants for a Warrant Certificate, evidencing the same number of Warrants, which request shall be in the form attached hereto as Annex A (a “Warrant Certificate Request Notice” and the date of delivery of such Warrant Certificate Request Notice by the Holder, the “Warrant Certificate Request Notice Date” and the deemed surrender upon delivery by the Holder of a number of Global Warrants for the same number of Warrants evidenced by a Warrant Certificate, a “Warrant Exchange”), the Warrant Agent shall promptly effect the Warrant Exchange and shall promptly issue and deliver, at the expense of the Company, to the Holder a Warrant Certificate, for such number of Warrants in the name set forth in the Warrant Certificate Request Notice. Such Warrant Certificate shall be dated the original issue date of the Warrants, shall be executed by manual signature by an authorized signatory of the Company, and shall be in the form attached hereto as Exhibit 1-A. In connection with a Warrant Exchange, the Company agrees to deliver, or to direct the Warrant Agent to deliver, the Warrant Certificate, to the Holder within seven (7) Business Days of the Company’s receipt of the Warrant Certificate Request Notice pursuant to the delivery instructions in the Warrant Certificate Request Notice (“Warrant Certificate Delivery Date”). If the Company fails for any reason to deliver to the Holder the Warrant Certificate subject to the Warrant Certificate Request Notice by the Warrant Certificate Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares evidenced by such Warrant Certificate (based on the VWAP (as defined in the Warrants) of the Common Stock on the Warrant Certificate Request Notice Date), \$10 per Business Day for each Business Day after such Warrant Certificate Delivery Date until such Warrant Certificate is delivered or, prior to delivery of such Warrant Certificate, the Holder rescinds such Warrant Exchange. In no event shall the Warrant Agent be liable for the Company’s failure to deliver the Warrant Certificate by the Warrant Certificate Delivery Date. The Company covenants and agrees that, upon the date of delivery of the Warrant Certificate Request Notice, the Holder shall be deemed to be the holder of the Warrant Certificate, as applicable, and, notwithstanding anything to the contrary set forth herein, the Warrant Certificate shall be deemed for all purposes to contain all of the terms and conditions of the Warrants, evidenced by such Warrant Certificate, and the terms of this Agreement, other than Sections 3(c) and 9 herein, shall not apply to the Warrants evidenced by the Warrant Certificate. Notwithstanding anything to the contrary contained in this Agreement, in the event of inconsistency between any provision in this Agreement and any provision in a Warrant Certificate, as it may from time to time be amended, the terms of such Warrant Certificate shall control.

Section 4. Form of Warrant Certificates. The Warrant Certificate, together with the form of election to purchase Common Stock (“Exercise Notice”) and the form of assignment to be printed on the reverse thereof, shall be in the form of Exhibit 1-A, as the case may be, hereto.

Section 5. Countersignature and Registration. The Warrant Certificates shall be executed on behalf of the Company by its Chief Executive Officer, Chief Financial Officer or Vice President, either manually or by .pdf via email signature. The Warrant Certificates shall be countersigned by the Warrant Agent either manually or by .pdf via email signature and shall not be valid for any purpose unless so countersigned. In case any officer of the Company who shall have signed any of the Warrant Certificates shall cease to be such officer of the Company before countersignature by the Warrant Agent and issuance and delivery by the Company, such Warrant Certificates, nevertheless, may be countersigned by the Warrant Agent, issued and delivered with the same force and effect as though the Person who signed such Warrant Certificate had not ceased to be such officer of the Company; and any Warrant Certificate may be signed on behalf of the Company by any Person who, at the actual date of the execution of such Warrant Certificate, shall be a proper officer of the Company to sign such Warrant Certificate, although at the date of the execution of this Agreement any such Person was not such an officer.

The Warrant Agent will keep or cause to be kept, at its office designated for such purposes, books for registration and transfer of the Global Warrants or Warrant Certificates issued hereunder. Such books shall show the names and addresses of the respective Holders of the Global Warrants or Warrant Certificates, the number of warrants evidenced on the face of each such Global Warrants or Warrant Certificate and the date of each such Global Warrants or Warrant Certificate. The Warrant Agent will create a special account for the issuance of Global Warrants and Warrant Certificates.

Section 6. Transfer, Split Up, Combination and Exchange of Warrant Certificates; Mutilated, Destroyed, Lost or Stolen Warrant Certificates. With respect to the Global Warrant, subject to the provisions of the Warrant Certificate, and the last sentence of this first paragraph of Section 6 and subject to applicable law, rules or regulations, or any "stop transfer" instructions the Company may give to the Warrant Agent, at any time after the closing date of the Offering, and at or prior to the Close of Business on the Termination Date (as such term is defined in the Warrant Certificate), any Warrant Certificate or Warrant Certificates or Global Warrant or Global Warrants may be transferred, split up, combined or exchanged for another Warrant Certificate or Warrant Certificates or Global Warrant or Global Warrants, entitling the Holder to purchase a like number of shares of Common Stock as the Warrant Certificate or Warrant Certificates or Global Warrant or Global Warrants surrendered then entitled such Holder to purchase. Any Holder desiring to transfer, split up, combine or exchange any Warrant Certificate or Global Warrant shall make such request in writing delivered to the Warrant Agent and shall surrender the Warrant Certificate or Warrant Certificates, together with the required form of assignment and certificate duly executed and properly completed and such other documentation as the Warrant Agent may reasonably request, to be transferred, split up, combined or exchanged at the office of the Warrant Agent designated for such purpose, provided that no such surrender is applicable to the Holder of a Global Warrant. Any requested transfer of Warrants, whether in book-entry form or certificate form, shall be accompanied by evidence of authority of the party making such request that may be reasonably required by the Warrant Agent. Thereupon the Warrant Agent shall, subject to the last sentence of this first paragraph of Section 6, countersign and deliver to the Person entitled thereto a Warrant Certificate or Warrant Certificates, as the case may be, as so requested. The Company may require payment from the Holder of a sum sufficient to cover any tax or governmental charge that may be imposed in connection with any transfer, split up, combination or exchange of Warrant Certificates. The Warrant Agent shall not have any duty or obligation to take any action under any section of this Agreement that requires the payment of taxes and/or charges unless and until it is satisfied that all such payments have been made.

Upon receipt by the Warrant Agent of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of a Warrant Certificate, which evidence shall include an affidavit of loss, or in the case of mutilated certificates, the certificate or portion thereof remaining, and, in case of loss, theft or destruction, of indemnity or security reasonably acceptable to the Company and the Warrant Agent, and satisfaction of any other reasonable requirements established by Section 8-405 of the Uniform Commercial Code as in effect in the State of Delaware, and reimbursement to the Company and the Warrant Agent of all reasonable expenses incidental thereto, and upon surrender to the Warrant Agent and cancellation of the Warrant Certificate if mutilated, the Company will make and deliver a new Warrant Certificate of like tenor to the Warrant Agent for delivery to the Holder in lieu of the Warrant Certificate so lost, stolen, destroyed or mutilated.

The Company shall provide to the Warrant Agent an opinion of counsel on or prior to the issuance of Warrants to set up a reserve of Warrant Shares for the outstanding Warrants. The opinion shall state that all Warrants or Warrant Shares, as applicable, are, (i) registered under the Securities Act of 1933, as amended, and (ii) assuming receipt by the Company of the Exercise Price for such Warrant, upon issuance will be validly issued, fully paid and non-assessable.

Section 7. Exercise of Warrants; Exercise Price; Termination Date.

(a) The Warrants shall be immediately exercisable. The Warrants shall cease to be exercisable on the Termination Date (as such term is defined in the Warrant Certificate). Subject to the foregoing and to Section 7(b) below, the Holder of a Warrant may exercise the Warrant, in whole or in part upon surrender of the Warrant Certificate, if required, with the properly completed and duly executed Exercise Notice and payment of the Exercise Price (unless exercised via a cashless exercise), which may be made, at the option of the Holder, by wire transfer or by certified or official bank check in United States dollars, to the Warrant Agent at the office of the Warrant Agent designated for such purposes. In the case of the Holder of a Global Warrant, the Holder shall deliver the duly executed Exercise Notice and the payment of the Exercise Price as described herein. Notwithstanding any other provision in this Agreement, a holder whose interest in a Global Warrant is a beneficial interest in a Global Warrant held in book-entry form through the Depository (or another established clearing corporation performing similar functions) shall effect exercises by delivering to the Depository (or such other clearing corporation, as applicable) the appropriate instruction form for exercise, complying with the procedures to effect exercise that is required by the Depository (or such other clearing corporation, as applicable). The Company acknowledges that the bank accounts maintained by the Warrant Agent in connection with the services provided under this Agreement will be in its name and that the Warrant Agent may receive investment earnings in connection with the investment at Warrant Agent risk and for its benefit of funds held in those accounts from time to time. Neither the Company nor the Holders will receive interest on any deposits or Exercise Price. No ink-original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice be required.

(b) Upon receipt of an Exercise Notice for a Cashless Exercise, the Warrant Agent shall deliver a copy of the Exercise Notice to the Company and request from the Company, and the Company shall promptly calculate and transmit to the Warrant Agent in writing, the number of Warrant Shares issuable in connection with such Cashless Exercise. The Warrant Agent shall have no obligation under this Agreement to calculate, the number of Warrant Shares issuable in connection with a Cashless Exercise, nor shall the Warrant Agent have any duty or obligation to investigate or confirm whether the Company's determination of the number of Warrant Shares issuable upon such exercise, pursuant to this Section 7, is accurate or correct.

(c) Upon the Warrant Agent's receipt of a Warrant Certificate, at or prior to the Close of Business on the Termination Date set forth in such Warrant Certificate, with the executed Exercise Notice and payment of the Exercise Price for the shares to be purchased (other than in the case of a Cashless Exercise) and an amount equal to any applicable tax, or governmental charge referred to in Section 6 by wire transfer, or by certified check or bank draft payable to the order of the Company (or, in the case of the Holder of a Global Warrant, the delivery of the executed Exercise Notice and the payment of the Exercise Price (other than in the case of a Cashless Exercise) and any other applicable amounts as set forth herein), the Warrant Agent shall cause the Warrant Shares underlying such Warrant Certificate, or Global Warrant, to be delivered to or upon the order of the Holder of such Warrant Certificate, or Global Warrant, registered in such name or names as may be designated by such Holder, no later than the Warrant Share Delivery Date (as such term is defined in the Warrant Certificate). If the Company is then a participant in the DWAC system of the Depository and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by Holder or (B) the Warrant is being exercised via Cashless Exercise, then the certificates for Warrant Shares shall be transmitted by the Warrant Agent to the Holder by crediting the account of the Holder's broker with the Depository through its DWAC system. For the avoidance of doubt, if the Company becomes obligated to pay any amounts to any Holders pursuant to Sections 2(d)(i) or 2(d)(iv) of the Warrant Certificate, such obligation shall be solely that of the Company and not that of the Warrant Agent. Notwithstanding anything else to the contrary in this Agreement, except in the case of a Cashless Exercise, if any Holder fails to duly deliver payment to the Warrant Agent of an amount equal to the aggregate Exercise Price of the Warrant Shares to be purchased upon exercise of such Holder's Warrant as set forth in Section 7(a) hereof by the Warrant Share Delivery Date, the Warrant Agent will not be obligated to deliver such Warrant Shares (via DWAC or otherwise) until following receipt of such payment, and the applicable Warrant Share Delivery Date shall be deemed extended by one day for each day (or part thereof) until such payment is delivered to the Warrant Agent.

(d) The Warrant Agent shall deposit all funds received by it in payment of the Exercise Price for all Warrants in the account of the Company maintained with the Warrant Agent for such purpose (or to such other account as directed by the Company in writing) and shall advise the Company via email at the end of each day on which exercise notices are received, or funds for the exercise of any Warrant are received, of the amount so deposited to its account.

(e) In case the Holder of any Warrant Certificate shall exercise fewer than all Warrants evidenced thereby, upon the request of the Holder, a new Warrant Certificate evidencing the number of Warrants equivalent to the number of Warrants remaining unexercised may be issued by the Warrant Agent to the Holder of such Warrant Certificate or to his duly authorized assigns in accordance with Section 2(d)(ii) of the [Warrant Certificate], subject to the provisions of Section 6 hereof.

Section 8. Cancellation and Destruction of Warrant Certificates. All Warrant Certificates surrendered for the purpose of exercise, transfer, split up, combination or exchange shall, if surrendered to the Company or to any of its agents, be delivered to the Warrant Agent for cancellation or in canceled form, or, if surrendered to the Warrant Agent, shall be canceled by it, and no Warrant Certificates shall be issued in lieu thereof except as expressly permitted by any of the provisions of this Agreement. The Company shall deliver to the Warrant Agent for cancellation and retirement, and the Warrant Agent shall so cancel and retire any other Warrant Certificate purchased or acquired by the Company otherwise than upon the exercise thereof. The Warrant Agent shall deliver all canceled Warrant Certificates to the Company, or shall, at the written request of the Company, destroy such canceled Warrant Certificates, and in such case shall deliver a certificate of destruction thereof to the Company, subject to any applicable law, rule or regulation requiring the Warrant Agent to retain such canceled certificates.

Section 9. Certain Representations: Reservation and Availability of Shares of Common Stock or Cash.

(a) This Agreement has been duly authorized, executed and delivered by the Company and, assuming due authorization, execution and delivery hereof by the Warrant Agent, constitutes a valid and legally binding obligation of the Company enforceable against the Company in accordance with its terms, and the Warrants have been duly authorized, executed and issued by the Company and, assuming due execution thereof by the Warrant Agent pursuant hereto and payment therefor by the Holders, constitute valid and legally binding obligations of the Company enforceable against the Company in accordance with their terms and entitled to the benefits hereof; in each case except as enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws relating to or affecting creditors' rights generally or by general equitable principles (regardless of whether such enforceability is considered in a proceeding in equity or at law).

(b) The Company covenants and agrees that it will cause to be reserved and kept available out of its authorized and unissued shares of Common Stock or its authorized and issued shares of Common Stock held in its treasury, free from preemptive rights, the number of shares of Common Stock that will be sufficient to permit the exercise in full of all outstanding Warrants.

(c) The Warrant Agent will create a special account for the issuance of Common Stock upon the exercise of Warrants.

(d) The Company further covenants and agrees that it will pay when due and payable any and all federal and state transfer taxes and charges which may be payable in respect of the original issuance or delivery of the Warrant Certificates or certificates evidencing Common Stock upon exercise of the Warrants. The Company shall not, however, be required to pay any tax or governmental charge which may be payable in respect of any transfer involved in the transfer or delivery of Warrant Certificates or the issuance or delivery of certificates for Common Stock in a name other than that of the Holder of the Warrant Certificate evidencing Warrants surrendered for exercise or to issue or deliver any certificate for shares of Common Stock upon the exercise of any Warrants until any such tax or governmental charge shall have been paid (any such tax or governmental charge being payable by the Holder of such Warrant Certificate at the time of surrender) or until it has been established to the Company's and the Warrant Agent's reasonable satisfaction that no such tax or governmental charge is due.

Section 10. Common Stock Record Date. Each Person in whose name any certificate for shares of Common Stock is issued (or to whose broker's account is credited shares of Common Stock through the DWAC system) upon the exercise of Warrants shall for all purposes be deemed to have become the holder of record for the Common Stock represented thereby on, and such certificate shall be dated, the date on which submission of the Exercise Notice was made, provided that the Warrant Certificate evidencing such Warrant was duly surrendered (but only if required herein) and payment of the Exercise Price (and any applicable transfer taxes) was received on or prior to the Warrant Share Delivery Date; provided, however, that, if the date of submission of the Exercise Notice is a date upon which the Common Stock transfer books of the Company are closed, such Person shall be deemed to have become the record holder of such shares on, and such certificate shall be dated, the next succeeding day on which the Common Stock transfer books of the Company are open.

Section 11. Adjustment of Exercise Price, Number of Shares of Common Stock or Number of the Company Warrants. The Exercise Price, the number of shares covered by each Warrant and the number of Warrants outstanding are subject to adjustment from time to time as provided in Section 3 of the Warrant Certificate. In the event that at any time, as a result of an adjustment made pursuant to Section 3 of the Warrant Certificate, the Holder of any Warrant thereafter exercised shall become entitled to receive any shares of capital stock of the Company other than shares of Common Stock, thereafter the number of such other shares so receivable upon exercise of any Warrant shall be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the shares contained in Section 3 of the Warrant Certificate, and the provisions of Sections 7, 9 and 13 of this Agreement with respect to the shares of Common Stock shall apply on like terms to any such other shares. All Warrants originally issued by the Company subsequent to any adjustment made to the Exercise Price pursuant to the Warrant Certificate shall evidence the right to purchase, at the adjusted Exercise Price, the number of shares of Common Stock purchasable from time to time hereunder upon exercise of the Warrants, all subject to further adjustment as provided herein.

Section 12. Certification of Adjusted Exercise Price or Number of Shares of Common Stock. Whenever the Exercise Price or the number of shares of Common Stock issuable upon the exercise of each Warrant Certificate is adjusted as provided in Section 11 or 13, the Company shall (a) promptly prepare a certificate setting forth the Exercise Price of each Warrant Certificate, as so adjusted, and a brief, reasonably detailed statement of the facts accounting for such adjustment, (b) promptly file with the Warrant Agent and with each transfer agent for the Common Stock a copy of such certificate and (c) instruct the Warrant Agent, at the Company's expense, to send a brief summary thereof to each Holder of a Warrant Certificate. The Warrant Agent shall be fully protected in relying on such certificate and on any adjustment or statement therein contained and shall have no duty or liability with respect to and shall not be deemed to have knowledge of any such adjustment or any such event unless and until it shall have received such certificate.

Section 13. Fractional Shares of Common Stock.

(a) The Company shall not issue fractions of Warrants or distribute Warrant Certificates which evidence fractional Warrants. Whenever any fractional Warrant would otherwise be required to be issued or distributed, the actual issuance or distribution shall reflect a rounding of such fraction to the nearest whole Warrant (rounded up).

(b) The Company shall not issue fractions of shares of Common Stock upon exercise of Warrants or distribute stock certificates which evidence fractional shares of Common Stock. Whenever any fraction of a share of Common Stock would otherwise be required to be issued or distributed, the actual issuance or distribution in respect thereof shall be made in accordance with Section 2(e)(v) of the Warrant.

Section 14. Concerning the Warrant Agent.

(a) The Company agrees to pay to the Warrant Agent, pursuant to the fee schedule mutually agreed upon by the parties hereto and provided separately on the date hereof, for all services rendered by it hereunder and, from time to time, its reasonable expenses and counsel fees and other disbursements incurred in the preparation, delivery, negotiation, amendment, administration and execution of this Agreement and the exercise and performance of its duties hereunder.

(b) The Company covenants and agrees to indemnify and to hold the Warrant Agent harmless against any costs, expenses (including reasonable fees and expenses of its legal counsel), losses or damages, which may be paid, incurred or suffered by or to which it may become subject, arising from or out of, directly or indirectly, any claims or liability resulting from its actions or omissions as Warrant Agent pursuant hereto; provided, that such covenant and agreement does not extend to, and the Warrant Agent shall not be indemnified with respect to, such costs, expenses, losses and damages incurred or suffered by the Warrant Agent as a result of, or arising out of, its gross negligence, bad faith, or willful misconduct (each as determined by a final non-appealable court of competent jurisdiction). Notwithstanding anything in this Agreement to the contrary, any liability of the Warrant Agent under this Agreement will be limited to the amount of annual fees paid by the Company to the Warrant Agent during the twelve (12) months immediately preceding the event for which recovery from the Warrant Agent is being sought. The costs and expenses incurred by the Warrant Agent in enforcing this right of indemnification shall be paid by the Company.

(c) Upon the assertion of a claim for which the Company may be required to indemnify the Warrant Agent, the Warrant Agent shall promptly notify the Company of such assertion, and shall keep the other party reasonably advised with respect to material developments concerning such claim. However, failure to give such notice shall not affect the Warrant Agent's right to and the Company's obligations for indemnification hereunder.

(d) Neither party to this Agreement shall be liable to the other party for any consequential, indirect, punitive, special or incidental damages under any provisions of this Agreement or for any consequential, indirect, punitive, special or incidental damages arising out of any act or failure to act hereunder even if that party has been advised of or has foreseen the possibility of such damages.

(e) Notwithstanding anything contained herein to the contrary, the rights and obligations of the parties set forth in this Section 14 shall survive termination of this Agreement, the expiration of the Warrants and/or the resignation, removal or replacement of the Warrant Agent.

Section 15. Purchase or Consolidation or Change of Name of Warrant Agent. Any Person into which the Warrant Agent or any successor Warrant Agent may be merged or with which it may be consolidated, or any Person resulting from any merger or consolidation to which the Warrant Agent or any successor Warrant Agent shall be party, or any Person succeeding to the stock transfer or other shareholder services business of the Warrant Agent or any successor Warrant Agent, shall be the successor to the Warrant Agent under this Agreement without the execution or filing of any paper or any further act on the part of any of the parties hereto, provided that such Person would be eligible for appointment as a successor Warrant Agent under the provisions of Section 17. In case at the time such successor Warrant Agent shall succeed to the agency created by this Agreement any of the Warrant Certificates shall have been countersigned but not delivered, any such successor Warrant Agent may adopt the countersignature of the predecessor Warrant Agent and deliver such Warrant Certificates so countersigned; and in case at that time any of the Warrant Certificates shall not have been countersigned, any successor Warrant Agent may countersign such Warrant Certificates either in the name of the predecessor Warrant Agent or in the name of the successor Warrant Agent; and in all such cases, such Warrant Certificates shall have the full force provided in the Warrant Certificates and in this Agreement.

In case at any time the name of the Warrant Agent shall be changed and at such time any of the Warrant Certificates shall have been countersigned but not delivered, the Warrant Agent may adopt the countersignature under its prior name and deliver Warrant Certificates so countersigned; and in case at that time any of the Warrant Certificates shall not have been countersigned, the Warrant Agent may countersign such Warrant Certificates either in its prior name or in its changed name; and in all such cases, such Warrant Certificates shall have the full force provided in the Warrant Certificates and in this Agreement.

Section 16. Duties of Warrant Agent. The Warrant Agent undertakes the duties and obligations imposed by this Agreement upon the following express terms and conditions (and no implied terms and conditions), by all of which the Company, by its acceptance hereof, shall be bound and shall not assume any obligations or relationship of agency or trust with any of the Holders of the Warrants or any other Person:

(a) The Warrant Agent may consult with legal counsel selected by it (who may be legal counsel for the Company), and the opinion and advice of such counsel shall be full and complete authorization and protection to the Warrant Agent as to any action taken or omitted by it in accordance with such opinion or advice.

(b) Whenever in the performance of its duties under this Agreement the Warrant Agent shall deem it necessary or desirable that any fact or matter be proved or established by the Company prior to taking or suffering any action hereunder, such fact or matter (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a certificate signed by the Chief Executive Officer, Chief Financial Officer or Vice President of the Company; and such certificate shall be full authorization and protection to the Warrant Agent, and the Warrant Agent shall incur no liability for or in respect of any action taken, suffered or omitted to be taken by it under the provisions of this Agreement in reliance upon such certificate. The Warrant Agent shall have no duty to act without such a certificate as set forth in this Section 16(b).

(c) Subject to the limitation set forth in Section 14, the Warrant Agent shall be liable hereunder only for its own gross negligence, bad faith or willful misconduct (each as determined in a final, non-appealable judgment of a court of competent jurisdiction).

(d) The Warrant Agent shall not be liable for or by reason of any of the statements of fact or recitals contained in this Agreement or in the Warrant Certificates (including in the case of any notation in book-entry form to reflect ownership), except its countersignature thereof, by the Company or be required to verify the same, but all such statements and recitals are and shall be deemed to have been made by the Company only.

(e) The Warrant Agent shall not have any liability or be under any responsibility in respect of the validity of this Agreement or the execution and delivery hereof (except the due execution hereof by the Warrant Agent) or in respect of the validity or execution of any Warrant Certificate (except its countersignature thereof); nor shall it be responsible for any breach by the Company of any covenant or condition contained in this Agreement or in any Warrant Certificate; nor shall it be responsible for the adjustment of the Exercise Price or the making of any change in the number of shares of Common Stock required under the provisions of Section 11 or 13 or responsible for the manner, method or amount of any such change or adjustment or the ascertaining of the existence of facts that would require any such adjustment or change (except with respect to the exercise of Warrants evidenced by Warrant Certificates after actual notice of any adjustment of the Exercise Price); nor shall it by any act hereunder be deemed to make any representation or warranty as to the authorization or reservation of any shares of Common Stock to be issued pursuant to this Agreement or any Warrant Certificate or as to whether any shares of Common Stock will, when issued, be duly authorized, validly issued, fully paid and nonassessable.

(f) Each party hereto agrees that it will perform, execute, acknowledge and deliver or cause to be performed, executed, acknowledged and delivered all such further and other acts, instruments and assurances as may reasonably be required by the other party hereto for the carrying out or performing by any party of the provisions of this Agreement.

(g) The Warrant Agent is hereby authorized to accept instructions with respect to the performance of its duties hereunder from the Chief Executive Officer, Chief Financial Officer, General Counsel or a Vice President of the Company, and to apply to such officers for advice or instructions in connection with its duties, and it shall not be liable and shall be indemnified and held harmless for any action taken or suffered to be taken by it in good faith in accordance with instructions of any such officer, provided Warrant Agent carries out such instructions without gross negligence, bad faith or willful misconduct.

(h) The Warrant Agent and any shareholder, director, officer or employee of the Warrant Agent may buy, sell or deal in any of the Warrants or other securities of the Company or become pecuniarily interested in any transaction in which the Company may be interested, or contract with or lend money to the Company or otherwise act as fully and freely as though it were not Warrant Agent under this Agreement. Nothing herein shall preclude the Warrant Agent from acting in any other capacity for the Company or for any other Person. In the event that the Warrant Agent seeks to exercise a Warrant, and provides the Company with (i) an opinion of counsel to the effect that a public sale or transfer of the Common Stock issuable upon exercise of the Warrant may be made without registration under the 1933 Act and such sale or transfer is effected or (ii) the Purchaser provides reasonable assurances that the Securities can be sold pursuant to an effective registration statement under the Securities Act of 1933, as amended, Rule 144, Section 4(a)(1), or other applicable exemption, the Company shall permit the transfer, and, in the case of the Common Stock issuable upon exercise of the Warrant, promptly instruct its transfer agent to issue one or more certificates, free from restrictive legend, in such name and in such denominations as specified by the Holder. The Company acknowledges that a breach by it of its obligations hereunder will cause irreparable harm to the Holder by vitiating the intent and purpose of the transactions contemplated hereby. Accordingly, the Company acknowledges that the remedy at law for a breach of its obligations under this Section 16(h) may be inadequate and agrees, in the event of a breach or threatened breach by the Company of the provisions of this Section, that the Holder shall be entitled, in addition to all other available remedies, to an injunction restraining any breach and requiring immediate transfer, without the necessity of showing economic loss and without any bond or other security being required.

(i) The Warrant Agent may execute and exercise any of the rights or powers hereby vested in it or perform any duty hereunder either itself or by or through its attorney or agents, and the Warrant Agent shall not be answerable or accountable for any act, default, neglect or misconduct of any such attorney or agents or for any loss to the Company resulting from any such act, default, neglect or misconduct, absent gross negligence or bad faith in the selection and continued employment thereof (which gross negligence and bad faith must be determined by a final, non-appealable judgment of a court of competent jurisdiction).

(j) The Warrant Agent shall not be obligated to expend or risk its own funds or to take any action that it believes would expose or subject it to expense or liability or to a risk of incurring expense or liability, unless it has been furnished with assurances of repayment or indemnity satisfactory to it.

(k) The Warrant Agent shall not be liable or responsible for any failure of the Company to comply with any of its obligations relating to any registration statement filed with the Securities and Exchange Commission or this Agreement, including without limitation obligations under applicable regulation or law.

(l) The Warrant Agent may rely on and be fully authorized and protected in acting or failing to act upon (a) any guaranty of signature by an "eligible guarantor institution" that is a member or participant in the Securities Transfer Agents Medallion Program or other comparable "signature guarantee program" or insurance program in addition to, or in substitution for, the foregoing; or (b) any law, act, regulation or any interpretation of the same even though such law, act, or regulation may thereafter have been altered, changed, amended or repealed.

(m) In the event the Warrant Agent believes any ambiguity or uncertainty exists hereunder or in any notice, instruction, direction, request or other communication, paper or document received by the Warrant Agent hereunder, the Warrant Agent, may, in its sole discretion, refrain from taking any action, and shall be fully protected and shall not be liable in any way to Company, the holder of any Warrant or any other Person for refraining from taking such action, unless the Warrant Agent receives written instructions signed by the Company which eliminates such ambiguity or uncertainty to the satisfaction of Warrant Agent.

(n) This Section 16 shall survive the expiration of the Warrants, the termination of this Agreement and the resignation, replacement or removal of the Warrant Agent. The costs and expenses incurred in enforcing this right of indemnification shall be paid by the Company.

Section 17. Change of Warrant Agent. The Warrant Agent may resign and be discharged from its duties under this Agreement upon thirty (30) days' notice in writing sent to the Company and, in the event that the Warrant Agent or one of its affiliates is not also the transfer agent for the Company, to each transfer agent of the Common Stock. In the event the transfer agency relationship in effect between the Company and the Warrant Agent terminates, the Warrant Agent will be deemed to have resigned automatically and be discharged from its duties under this Agreement as of the effective date of such termination, and the Company shall be responsible for sending any required notice thereunder. The Company may remove the Warrant Agent or any successor Warrant Agent upon thirty (30) days' notice in writing, sent to the Warrant Agent or successor Warrant Agent, as the case may be, and to each transfer agent of the Common Stock, and to the Holders of the Warrant Certificates. If the Warrant Agent shall resign or be removed or shall otherwise become incapable of acting, the Company shall appoint a successor to the Warrant Agent. If the Company shall fail to make such appointment within a period of thirty (30) days after such removal or after it has been notified in writing of such resignation or incapacity by the resigning or incapacitated Warrant Agent or by the Holder of a Warrant Certificate (who shall, with such notice, submit this Warrant Certificate for inspection by the Company), then the Holder of any Warrant Certificate may apply to any court of competent jurisdiction for the appointment of a new Warrant Agent, provided that, for purposes of this Agreement, the Company shall be deemed to be the Warrant Agent until a new warrant agent is appointed. Any successor Warrant Agent, whether appointed by the Company or by such a court, shall be a Person, other than a natural person, organized and doing business under the laws of the United States or of a state thereof, in good standing, which is authorized under such laws to exercise stock transfer powers and is subject to supervision or examination by federal or state authority and which has at the time of its appointment as Warrant Agent a combined capital and surplus of at least \$50,000,000. After appointment, the successor Warrant Agent shall be vested with the same powers, rights, duties and responsibilities as if it had been originally named as Warrant Agent without further act or deed; but the predecessor Warrant Agent shall deliver and transfer to the successor Warrant Agent any property at the time held by it hereunder, and execute and deliver any further assurance, conveyance, act or deed necessary for the purpose but such predecessor Warrant Agent shall not be required to make any additional expenditure (without prompt reimbursement by the Company) or assume any additional liability in connection with the foregoing. Not later than the effective date of any such appointment, the Company shall file notice thereof in writing with the predecessor Warrant Agent and each transfer agent of the Common Stock and mail a notice thereof in writing to the Holders of the Warrant Certificates. However, failure to give any notice provided for in this Section 17, or any defect therein, shall not affect the legality or validity of the resignation or removal of the Warrant Agent or the appointment of the successor Warrant Agent, as the case may be.

Section 18. Issuance of New Warrant Certificates. Notwithstanding any of the provisions of this Agreement or of the Warrants to the contrary, the Company may, at its option, issue new Warrant Certificates evidencing Warrants in such form as may be approved by its Board of Directors to reflect any adjustment or change in the Exercise Price per share and the number or kind or class of shares of stock or other securities or property purchasable under the several Warrant Certificates made in accordance with the provisions of this Agreement.

Section 19. Notices. Notices or demands authorized by this Agreement to be given or made (i) by the Warrant Agent or by the Holder of any Warrant Certificate to or on the Company, (ii) by the Company or by the Holder of any Warrant Certificate to or on the Warrant Agent or (iii) by the Company or the Warrant Agent to the Holder of any Warrant Certificate, shall be deemed given when in writing (a) on the date delivered, if delivered personally, (b) on the first Business Day following the deposit thereof with Federal Express or another recognized overnight courier, if sent by Federal Express or another recognized overnight courier, (c) on the fourth Business Day following the mailing thereof with postage prepaid, if mailed by registered or certified mail (return receipt requested), and (d) the time of transmission, if such notice or communication is delivered via e-mail attachment at or prior to 5:30 p.m. (New York City time) on a Business Day and (e) the next Business Day after the date of transmission, if such notice or communication is delivered via e-mail attachment on a day that is not a Business Day or later than 5:30 p.m. (New York City time) on any Business Day, in each case to the parties at the following addresses (or at such other address for a party as shall be specified by like notice):

(a) If to the Company, to:

FibroBiologics, Inc.
455 E. Medical Center Blvd., Suite 300
Houston, Texas 77598
Attn: Legal Department
Email: legal@fibrobiologics.com

With a copy (which shall not constitute notice) to:

Norton Rose Fulbright US LLP
1301 McKinney, Suite 5100
Houston, Texas 77010-3095
Attn: Brian P. Fenske
Email: brian.fenske@nortonrosefulbright.com

(b) If to the Warrant Agent, to:

Email:
Attn:

For any notice delivered by email to be deemed given or made, such notice must be followed by notice sent by overnight courier service to be delivered on the next Business Day following such email, unless the recipient of such email has acknowledged via return email receipt of such email.

(c) If to the Holder of any Warrant Certificate, to the address of such Holder as shown on the registry books of the Company. Any notice required to be delivered by the Company to the Holder of any Warrant may be given by the Warrant Agent on behalf of the Company. Notwithstanding any other provision of this Agreement, where this Agreement provides for notice of any event to a Holder of any Warrant, such notice shall be sufficiently given if given to the Depository (or its designee) pursuant to the procedures of the Depository or its designee.

Section 20. Supplements and Amendments.

(a) The Company and the Warrant Agent may from time to time supplement or amend this Agreement without the approval of any Holders of Global Warrants in order to (i) add to the covenants and agreements of the Company for the benefit of the Holders of the Global Warrants, (ii) to surrender any rights or power reserved to or conferred upon the Company in this Agreement, (iii) to cure any ambiguity, (iv) to correct or supplement any provision contained herein which may be defective or inconsistent with any other provisions herein, or (v) to make any other provisions with regard to matters or questions arising hereunder which the Company and the Warrant Agent may deem necessary or desirable, provided that such addition, correction or surrender shall not adversely affect the interests of the Holders of the Global Warrants or Warrant Certificates in any material respect.

(b) In addition to the foregoing, with the consent of Holders of Warrants entitled, upon exercise thereof, to receive not less than a majority of the shares of Common Stock issuable thereunder, the Company and the Warrant Agent may modify this Agreement for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of this Agreement or modifying in any manner the rights of the Holders of the Global Warrants; provided, however, that that (i) if any amendment, modification or waiver disproportionately and adversely impacts a Holder (or group of Holders), the consent of such disproportionately impacted Holder (or group of Holders) shall also be required and (ii) no modification of the terms (including but not limited to the adjustments described in Section 11) upon which the Warrants are exercisable or reducing the percentage required for consent to modification of this Agreement may be made without the consent of the Holder of each outstanding warrant certificate affected thereby; provided further, however, that no amendment hereunder shall affect any terms of any Warrant Certificate issued in a Warrant Exchange. As a condition precedent to the Warrant Agent's execution of any amendment, the Company shall deliver to the Warrant Agent a certificate from a duly authorized officer of the Company that states that the proposed amendment complies with the terms of this Section 20. No supplement or amendment to this Agreement shall be effective unless duly executed by the Warrant Agent.

Section 21. Successors. All covenants and provisions of this Agreement by or for the benefit of the Company or the Warrant Agent shall bind and inure to the benefit of their respective successors and assigns hereunder.

Section 22. Benefits of this Agreement. Nothing in this Agreement shall be construed to give any Person other than the Company, the Holders of Warrant Certificates and the Warrant Agent any legal or equitable right, remedy or claim under this Agreement; but this Agreement shall be for the sole and exclusive benefit of the Company, the Warrant Agent and the Holders of the Warrant Certificates.

Section 23. Governing Law; Jurisdiction. This Agreement and each Warrant Certificate issued hereunder shall be governed by, and construed in accordance with, the laws of the State of New York without giving effect to the conflicts of law principles thereof. The Company hereby agrees that any action, proceeding or claim against it arising out of or relating in any way to this Agreement shall be brought and enforced in the courts of the State of New York or the United States District Court for the Southern District of New York, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenience forum.

Section 24. Counterparts. This Agreement may be executed in any number of counterparts and each of such counterparts shall for all purposes be deemed to be an original, and all such counterparts shall together constitute but one and the same instrument. A signature to this Agreement transmitted electronically shall have the same authority, effect and enforceability as an original signature.

Section 25. Captions. The captions of the sections of this Agreement have been inserted for convenience only and shall not control or affect the meaning or construction of any of the provisions hereof.

Section 26. Severability. Wherever possible, each provision of this Agreement shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Agreement; provided, however, that if such prohibited and invalid provision shall adversely affect the rights, immunities, liabilities, duties or obligations of the Warrant Agent, the Warrant Agent shall be entitled to resign immediately upon written notice to the Company.

Section 27. Conflicts. To the extent any provision of this Agreement conflicts with the express provisions of the Warrant Certificate, the provisions of the Warrant Certificate shall govern and be controlling.

Section 28. Force Majeure. Notwithstanding anything to the contrary contained herein, the Warrant Agent will not be liable for any delays or failures in performance resulting from acts beyond its reasonable control, including, without limitation, acts of God, terrorist acts, shortage of supply, breakdowns or malfunctions, interruptions or malfunction of computer facilities, or loss of data due to power failures or mechanical difficulties with information storage or retrieval systems, labor difficulties, war, or civil unrest.

Section 29. Entire Agreement. The parties hereto acknowledge that there are no agreements or understandings, written or oral, between them with respect to matters contemplated hereunder other than as set forth herein and the Warrant Certificates, that this Agreement and the Warrant Certificates contain the entire agreement between them with respect to the subject matter hereof and thereof.

Section 30. Fees; Expenses. As consideration for the services provided by VStock (the "Services"), the Company shall pay to VStock the fees set forth on Schedule 1 hereto (the "Fees"). If the Company requests that VStock provide additional services not contemplated hereby, the Company shall pay to VStock fees for such services at VStock's reasonable and customary rates, such fees to be governed by the terms of a separate agreement to be mutually agreed to and entered into by the Parties at such time (the "Additional Service Fee"; together with the Fees, the "Service Fees").

(a) The Company shall reimburse VStock for all reasonable and documented expenses incurred by VStock (including, without limitation, reasonable and documented fees and disbursements of counsel) in connection with the Services (the "Expenses"); provided, however, that VStock reserves the right to request advance payment for any out-of-pocket expenses. The Company agrees to pay all Service Fees and Expenses within thirty (30) days following receipt of an invoice from VStock.

(b) The Company agrees and acknowledges that VStock may adjust the Service Fees annually, on or about each anniversary date of this Agreement, by the annual percentage of change in the latest Consumer Price Index of All Urban Consumers United States City Average, as published by the U.S. Department of Labor, Bureau of Labor Statistics.

(c) Upon termination of this Agreement for any reason, VStock shall assist the Company with the transfer of records of the Company held by VStock. VStock shall be entitled to reasonable additional compensation and reimbursement of any Expenses for the preparation and delivery of such records to the successor agent or to the Company, and for maintaining records and/or Stock Certificates that are received after the termination of this Agreement (the "Record Transfer Services").

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the day and year first above written.

FIBROBIOLOGICS, INC.

By: _____
Name:
Title:

VSTOCK TRANSFER LLC

By: _____
Name:
Title:

Annex A: Form of Warrant Certificate Request Notice

WARRANT CERTIFICATE REQUEST NOTICE

To: VStock Transfer LLC, as Warrant Agent for FibroBiologics, Inc. (the "Company")

The undersigned Holder of _____ warrants ("Warrants") in the form of _____ Global Warrants issued by the Company hereby elects to receive a Warrant Certificate evidencing the Warrants held by the Holder as specified below:

1. Name of Holder of _____ Warrants in form of Global Warrants: _____
2. Name of Holder in Warrant Certificate (if different from name of Holder of Warrants in form of Global Warrants): _____
3. Number of Warrants in name of Holder in form of Global Warrants: _____
4. Number of Warrants for which Warrant Certificate shall be issued: _____
5. Number of Warrants in name of Holder in form of Global Warrants after issuance of Warrant Certificate, if any: _____

_____ Warrant Certificate shall be delivered to the following address:

The undersigned hereby acknowledges and agrees that, in connection with this Warrant Exchange and the issuance of the Warrant Certificate, the Holder is deemed to have surrendered the number of Warrants in form of Global Warrants in the name of the Holder equal to the number of Warrants evidenced by the Warrant Certificate.

[SIGNATURE OF HOLDER]

Name of Investing Entity: _____

Signature of Authorized Signatory of Investing Entity: _____

Name of Authorized Signatory: _____

Title of Authorized Signatory: _____

Date: _____

Fees

Monthly Warrant Administration Fee (per Warrant Issue)

\$____.00

EXCHANGE OF WARRANTS INTO COMMON SHARES

Per Manual Exercise of Warrants (until established on DTC WARR System)

\$____.00

SPECIAL SERVICES

Services not included herein (including, without limitation, trustee and custodial services, exchange/tender offer services and stock dividend disbursement services) but requested by the Company may be subject to additional charges.

OUT-OF-POCKET EXPENSES

All customary out-of-pocket expenses will be billed in addition to the foregoing fees. These charges include, but are not limited to, printing and stationery, freight and materials delivery, postage and handling.

The foregoing fees apply to services ordinarily rendered by _____ and are subject to reasonable adjustment based on final review of documents.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement on Form S-1 of our report dated February 29, 2024, relating to the financial statements of FibroBiologics, Inc. as of and for the years ended December 31, 2023 and 2022, which is incorporated by reference in that Prospectus.

We also consent to the reference to our firm under the caption “Experts” in the Prospectus.

/s/ WithumSmith+Brown, PC

East Brunswick, New Jersey

April 25, 2024

RUSH-PRESBYTERIAN-ST. LUKE'S MEDICAL CENTER
RUSH UNIVERSITY

1725 W. HARRISON STREET • SUITE 1063, CHICAGO, IL 60612-3824 • 312.243.4244
RUSH MEDICAL COLLEGE FAX 312.942.1516



DEPARTMENT OF ORTHOPEDIC SURGERY

HOWARD S. AN, M.D.
THE MORTON INTERNATIONAL PROFESSOR
DIRECTOR, SPINE FELLOWSHIP PROGRAM



June 24, 2023

Summary of animal study results from Howard An, M.D., Director, Spine Fellowship Program, Rush University Medical College:

Our studies have shown that this biological treatment using human dermal fibroblast cells, has great potential as a cell therapy for disc degeneration. When these cells were injected into a degenerating rabbit disc, they were retained in the disc for up to 8 weeks. Collagen Type II gene expression, a marker for disc repair and regeneration, was higher in the discs treated with human dermal fibroblast cells than those in the control treatment. Also higher in the cell treated discs were the disc heights and cell number. Together, this data suggests that human dermal fibroblast cells are a promising option for cell therapy to restore the biological function and reduce symptoms of intermediate or progressive degenerative discs.

I approve for Fibrobiologics Inc. to use this statement for S-1 filing.

A handwritten signature in black ink that reads 'Howard S. An, M.D.' in a cursive style.

Howard S. An, M.D

Calculation of Filing Fee Tables

FORM S-1
(Form Type)FibroBiologics, Inc.
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

Security Type	Security Class Title (1)	Fee Calculation Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price (2)	Fee Rate	Amount of Registration Fee
Equity	Common stock, par value \$0.00001 per share	Rule 457(a)	1,801,801(3)	\$ 11.10(3)	\$ 19,999,991.10	147.60 per \$1,000,000	\$ 2,952.00
Equity	Warrants to purchase common stock	Other					
Equity	Common stock, par value \$0.00001 per share, underlying warrants	Other	1,801,801(3)	\$ 11.10(4)	\$ 19,999,991.10	147.60 per \$1,000,000	\$ 2,952.00
Total Offering Amounts					\$ 39,999,982.20		\$ 5,904.00
Total Fee Offsets							—
Net Fee Due							\$ 5,904.00

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the “Securities Act”), this Registration Statement on Form S-1 shall be deemed to cover any additional shares of common stock, par value \$0.00001 per share (the “Common Stock”) of FibroBiologics, Inc. that may be issued as a result of any stock dividend, stock split, recapitalization or other similar transaction, and any other securities with respect to which the outstanding shares are converted or exchanged.
- (2) Each unit to be sold in this offering will consist of one share of common stock and one warrant to purchase one share of common stock. In accordance with Rule 457(i) under the Securities Act, no separate registration fee is required with respect to the warrants registered hereby.
- (3) Estimated solely for purposes of calculating the registration fee in accordance with Rule 457(d) under the Securities Act of 1933, as amended (the “Securities Act”), based on a market value per share reference price of \$11.10.
- (4) Based on an assumed per share exercise price for the warrants to purchase common stock of 100% of the public offering price per unit in this offering.