

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

Amendment No. 1
to
FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Novus Therapeutics, 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)

20-1000967
(I.R.S. Employer
Identification Number)

19900 MacArthur Blvd., Suite 550
Irvine, California 92612
(949) 238-8090
(Address, including zip code, and telephone number, including area code, of Registrant's principal executive offices)

Gregory J. Flesher
Chief Executive Officer
Novus Therapeutics, Inc.
19900 MacArthur Blvd., Suite 550
Irvine, California 92612
(949) 238-8090
(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Approximate date of commencement of proposed sale to the public:
As soon as practicable after the effective date of this Registration Statement.

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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

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 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

[Table of Contents](#)

The information in this preliminary prospectus is not complete and may be changed. We may not sell these securities 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.

Subject to completion, dated September 4, 2018

Prospectus

6,000,000 Shares



NOVUS THERAPEUTICS, INC.

Common Stock

\$ per share

- Novus Therapeutics, Inc. is offering 6,000,000 shares of its common stock.
- Nasdaq Capital Market trading symbol: “NVUS.”
- On August 31, 2018, the last reported sale price of our common stock on the Nasdaq Capital Market was \$4.75 per share.

Investing in our common stock involves a high degree of risk. See “[Risk Factors](#)” beginning on page 6.

| | Per share | Total |
|-------------------------------------------------------|-----------|-------|
| Public offering price | \$ | \$ |
| Underwriting discounts and commissions ⁽¹⁾ | \$ | \$ |
| Proceeds to Novus Therapeutics, Inc., before expenses | \$ | \$ |

(1) See “Underwriting (Conflicts of Interest)” for additional disclosure regarding underwriting discounts, commissions and estimated offering expenses.

The underwriters have been granted an option for a period of 30 days to purchase up to 900,000 additional shares of common stock.

We are an “emerging growth company,” as that term is used in the Jumpstart Our Business Startups Act of 2012, and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares of common stock to purchasers on or about _____, 2018.

Piper Jaffray

Ladenburg Thalmann

LifeSci Capital

The date of this prospectus is _____, 2018

TABLE OF CONTENTS

| | |
|----------------------------------------------------------------------|----|
| PROSPECTUS SUMMARY | 1 |
| THE OFFERING | 4 |
| RISK FACTORS | 6 |
| CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS | 8 |
| USE OF PROCEEDS | 9 |
| CAPITALIZATION | 10 |
| DILUTION | 11 |
| DESCRIPTION OF CAPITAL STOCK | 13 |
| UNDERWRITING (CONFLICTS OF INTEREST) | 16 |
| LEGAL MATTERS | 24 |
| EXPERTS | 24 |
| WHERE YOU CAN FIND MORE INFORMATION | 25 |
| INCORPORATION OF CERTAIN INFORMATION BY REFERENCE | 26 |

We have not authorized anyone to provide you with information other than that contained in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give to you. We are offering to sell, and seeking offers to buy, our securities only in jurisdictions where offers and sales are permitted. The information contained in this prospectus or in any free writing prospectus is accurate only as of their respective dates, regardless of the time of delivery of such materials or the time of any sale our securities. Our business, financial condition, results of operations, and prospects may have changed since those dates.

No action is being taken in any jurisdiction outside the United States to permit a public offering of our common stock or possession or distribution of this prospectus in that jurisdiction. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus applicable to that jurisdiction.

Unless otherwise noted: (1) the term “Novus Therapeutics” refers to Novus Therapeutics, Inc., a Delaware corporation, formerly known as Tokai Pharmaceuticals, Inc., (2) the terms “Novus,” the “Company,” “we,” “us,” and “our,” refer to the ongoing business operations of Novus Therapeutics and its subsidiaries, including Otic Pharma, Ltd., whether such activities are conducted through Novus Therapeutics or a subsidiary of the company, (3) the term “Common Stock” refers to shares of Novus Therapeutics’ Common Stock and (4) the term “stockholder(s)” refers to the holders of Common Stock or securities exercisable for Common Stock.

PROSPECTUS SUMMARY

This summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our common stock. For a more complete understanding of our company and this offering, we encourage you to read and consider carefully the more detailed information in this prospectus, including the information incorporated by reference in this prospectus, and the information included in any free writing prospectus that we have authorized for use in connection with this offering, including the information under the heading "Risk Factors" in this prospectus on page 6 and in the documents incorporated by reference into this prospectus.

Company Overview

Novus Therapeutics, Inc. ("Novus") is a specialty pharmaceutical company focused on developing products for disorders of the ear, nose, and throat ("ENT"). Novus has two technologies, each that has the potential to be developed for multiple ENT indications. Novus' lead product candidate (OP-02) is a surfactant-based, combination drug product being developed as a potential first-in-class treatment option for patients at risk for, or with, otitis media ("OM" or middle ear inflammation with or without infection). Globally, OM affects more than 700 million adults and children every year, with over half of cases occurring in children under five years of age. OM is one of the most common disorders seen in pediatric practice, and in the United States is a leading cause of health care visits and the most frequent reason children are prescribed antibiotics or undergo surgery. Novus also has a foam-based drug delivery technology (OP-01), which may be developed in the future to deliver drugs into the ear, nasal, and sinus cavities.

OP-02 Surfactant Program

OP-02 is being developed as a potential first-in-class treatment option for OM, which is often caused by Eustachian tube dysfunction ("ETD"). In the United States alone, over \$5 billion is spent annually on the management of OM. In the course of a year, over 8 million children are diagnosed with acute OM ("AOM" or middle ear inflammation with infectious fluid) and over 2 million children are diagnosed with OM with effusion ("OME" or middle ear inflammation with non-infectious fluid). Additionally, over 2.5 million children are diagnosed with recurrent AOM ("RAOM") or chronic OME ("COME"), and at least 1 million people are diagnosed with Chronic Suppurative Otitis Media ("CSOM" or eardrum perforation with persistent drainage), oftentimes resulting in surgeries. Assuming one prescription for each AOM and OME diagnosis and two or more additional refills for each RAOM, COME, and CSOM patient, OP-02 has a U.S. opportunity of over 20 million prescriptions per year.

OP-02 is a drug-device combination product comprised of a proprietary formulation surfactant (dipalmitoylphosphatidylcholine ("DPPC")) and a spreading agent (cholesteryl palmitate ("CP")) suspended in propellant. The product is administered intranasally via a pressurized metered-dose inhaler ("pMDI") and is intended to be used to restore the normal physiologic activity of the Eustachian tube ("ET"), which is the small tube that connects the middle ear to the back of the nasopharynx. Together DPPC and CP are designed to effectively absorb to the air-liquid interface of the mucosa and reduce the interfacial surface tension of the ET, which reduces passive pressure required for the ET to open. In other words, OP-02 is intended to promote 'de-sticking' of the ET so that ventilation and drainage of the middle ear may occur.

The positive effects of OP-02 on Eustachian tube function have been observed in preclinical animal studies. Meaningful reductions in passive opening pressure ("POP") of healthy Eustachian tube, as well as meaningful reduction in severity and duration of OM episodes in three animal species after treatment

[Table of Contents](#)

with OP-02 have been observed. In two separate animal-model experiments, the investigators studied the effects of intranasal administration of an early formulation of OP-02 on Eustachian tube POP of the left ear as compared to propellant in healthy Mongolian gerbils and albino mice. In both animal species, administration of OP-02 resulted in significant ($p < 0.001$) reductions in mean Eustachian tube POP measurements at both the 5 and 10-minute assessment times compared to baseline and immediately following propellant alone administration. In a study of experimentally induced AOM in chinchillas, the use of OP-02 was associated with a marked reduction in the severity and duration of AOM. Furthermore, quantitative cultures of middle ear fluid showed dramatic decreases in bacterial colonization with intranasal surfactant treatment alone (i.e., no antibiotics were administered in this study). Based on these findings, Novus believes that resolution of effusion may occur significantly earlier with surfactant treatment than with placebo. The data suggest that enhancement/restoration of Eustachian tube function is beneficial in acute bacterial OM. Prior to licensing rights to OP-02, nine humans with various OM and ETD conditions were treated with OP-02 by the inventors. This human experience was captured as case studies and reported to the U.S. Food and Drug Administration (FDA). Based on these case studies, in conjunction with the preclinical animal data, Novus believes that a product of this type may have utility in the treatment and prevention of OM and ETD in children and adults.

Novus expects to initiate a phase 1 clinical program of OP-02 in 2018. The phase 1 program will include a single safety study to evaluate repeated intranasal doses of OP-02 in healthy adults plus additional phase 1 studies to explore safety and efficacy in patients with OME and AOM. Novus expects to complete the phase 1 program by mid-2019. Upon completion of the phase 1 program in 2019, Novus intends to initiate a phase 2 program consisting of multiple phase 2 clinical trials that will evaluate OP-02 as a treatment for OME and as a treatment to prevent COME, as well as a separate study to evaluate OP-02 as a treatment to prevent RAOM in children 6-months of age or older. Upon successful completion of the phase 2 studies in late 2020, Novus plans to initiate a phase 3 program of OP-02, with an initial focus on the registration of OP-02 in North America and key European markets as a product to treat and prevent AOM and OME in children. Additional development activities to support registration in other countries and/or for other OM disorders, or in other patient populations, may occur in the future.

OP-01 Foam Platform

OP-01 is a foam-based product intended to be used as a delivery vehicle for drugs to be administered into the ears, as well as the nasal and sinus cavities. Specifically, OP-01 was initially developed as an improved treatment option for acute otitis externa (“AOE”), a common medical condition of the outer ear canal that affects tens of millions of adults and children each year (frequently called “swimmer’s ear”). Novus completed four clinical trials of OP-01 in 353 adult and pediatric subjects, including a successful phase 2b clinical trial with a steroid-free, antibiotic-only formulation of OP-01 that performed similarly to standard of care, but with a favorable dosing regimen.

In 2016, Novus began development of a second-generation combination drug product containing an antibiotic plus an anesthetic designed to rapidly relieve ear pain (an unmet need in AOE) and eradicate the infection with less than seven days of treatment. Novus subsequently paused the OP-01 development program to focus resources on OP-02.

Recent Developments

As of June 30, 2018, we had cash and cash equivalents of approximately \$19.2 million.

On June 19, 2018, we disclosed receipt of final meeting minutes from a Type C meeting with the FDA that was held at our request to discuss our OP-02 development program in OM. The FDA provided

Table of Contents

guidance on the planned 505(b)(2) development path for OP-02 and confirmed that no additional preclinical or clinical studies beyond our planned phase 1 safety study in healthy adults will be required before initiation of phase 2 studies in children 6-months of age or older with OM. The FDA also confirmed that development of OP-02 for separate OM treatment and prevention indications is acceptable and provided initial guidance on study design for those indications.

Reverse Merger

On December 21, 2016, Tokai Pharmaceuticals, Inc. (“Tokai”), a Delaware corporation, Otic, and the shareholders of Otic (each a “Seller” and collectively, the “Sellers”), entered into a Share Purchase Agreement (the “Share Purchase Agreement”), pursuant to which, among other things, each Seller agreed to sell to Tokai, and Tokai agreed to purchase from each Seller, all of the common and preferred shares of Otic (“Otic Shares”) owned by such Seller in exchange for the issuance of a certain number of shares of common stock of Tokai, as determined pursuant to the terms of the Share Purchase Agreement (the “Reverse Merger”). The parties amended and restated the Share Purchase Agreement on March 2, 2017.

On May 9, 2017, Tokai, Otic, and the Sellers closed the transaction contemplated by the Share Purchase Agreement, and subsequently effected a reverse stock split at a ratio of one-for-nine (the “Reverse Stock Split”). On a post-split basis, Tokai issued to the Sellers an aggregate of 4,027,693 shares of Tokai’s common stock in exchange for all outstanding Otic Shares. Following the completion of the Reverse Merger, the business being conducted by Tokai became primarily the business conducted by Otic. In connection with the Reverse Merger, the name of the surviving corporation was changed to “Novus Therapeutics, Inc.” The shares of common stock being offered through this prospectus give effect to the Reverse Stock Split.

Company Information

We were incorporated under the laws of the State of Delaware on March 26, 2004 under the name Tokai Pharmaceuticals, Inc. and we changed our name to Novus Therapeutics, Inc. on May 9, 2017. Our principal executive offices are located at 19900 MacArthur Boulevard, Suite 550, Irvine, California 92612, and our telephone number is (949) 238-8090. Our website address is www.novustherapeutics.com. The information contained in, or accessible through, our website does not constitute part of this prospectus. We have included our website address in this prospectus solely as an inactive textual reference.

THE OFFERING

| | |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Issuer | Novus Therapeutics, Inc. |
| Common stock offered by us | 6,000,000 shares, plus to up an additional 900,000 shares if the underwriters exercise their option to purchase additional shares. |
| Common stock to be outstanding after this offering | 15,407,024 shares (or 16,307,024 shares if the underwriters exercise their option to purchase additional shares.) |
| Underwriter's option to purchase additional shares | The underwriters have been granted a 30-day option to purchase up to an additional 900,000 shares of our common stock. |
| Use of proceeds | <p>We estimate that the net proceeds to us from this offering will be approximately \$26.3 million, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering as follows:</p> <ul style="list-style-type: none">• approximately \$10 million to fund a phase 2 clinical trial evaluating OP-02 as a treatment for OME and as a treatment to prevent chronic OME in children;• approximately \$10 million to fund a phase 2 clinical trial evaluating OP-02 as a treatment to prevent recurrent AOM in children; and• the remainder for working capital purposes, including general operating expenses. <p>See "Use of Proceeds" on page 9.</p> |
| Risk factors | Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 6 of this prospectus and under similar headings in the other documents that are filed after the date hereof and incorporated by reference in this prospectus for a discussion of factors you should carefully consider before deciding to invest in shares of our common stock. |
| Conflicts of interest | Because affiliates of LifeSci Capital LLC beneficially own an aggregate of 1,151,088 shares of our common stock, or approximately 12.2%, LifeSci Capital is deemed to have a conflict of interest under Financial Industry Regulatory Authority (which we refer to as "FINRA") Rule 5121. Accordingly, this offering will be conducted in accordance with FINRA |

[Table of Contents](#)

Rule 5121, which requires that Piper Jaffray & Co., the representative of the underwriters, does not have a conflict of interest, is not an affiliate of LifeSci Capital and meets the requirements of paragraph (f) (12)(E) of Rule 5121. See “Underwriting (Conflicts of Interest)—Conflicts of Interest.”

Nasdaq Capital Market symbol

“NVUS”.

The above discussion and table are based on 9,407,024 shares of our common stock issued and outstanding as of June 30, 2018 and excludes the following:

- 910,761 shares of our common stock issuable upon the exercise of stock options outstanding at a weighted-average exercise price of \$6.23 per share; and
- 3,507,312 additional shares of our common stock available for future issuance under our 2014 Stock Incentive Plan and our Employee Stock Purchase Plan.

Except as otherwise indicated, all information contained in this prospectus:

- assumes that the underwriters do not exercise their option to purchase additional shares; and
 - assumes no exercise of outstanding options after June 30, 2018.
-

RISK FACTORS

Investing in our common stock involves a high degree of risk. Before investing in our common stock, you should carefully consider the risks and uncertainties described below and under the sections captioned "Risk Factors" contained in our most recent Annual Report on Form 10-K, as revised or supplemented by our most recent Quarterly Report on Form 10-Q, as well as our subsequent Quarterly Reports on Form 10-Q, which are incorporated herein by reference, together with the other information contained in this prospectus and in our filings with the SEC that we have incorporated by reference in this prospectus. We expect to update these Risk Factors from time to time in the periodic and current reports we file with the SEC after the date of this prospectus. These updated Risk Factors will be incorporated by reference in this prospectus. If any of these risks occur, our business, financial condition, results of operations and future growth prospects could be materially and adversely affected. In these circumstances, the market price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to this Offering

If you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of your investment.

The price per share of our common stock in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Therefore, if you purchase shares of our common stock in this offering, you may pay a price per share that substantially exceeds our net tangible book value per share after this offering. To the extent shares are issued under outstanding options at exercise prices lower than the price of our common stock in this offering, you will incur further dilution. Assuming that an aggregate of 6,000,000 shares of our common stock are sold at a price of \$4.75 per share, the last reported sale price of our common stock on the Nasdaq Capital Market on August 31, 2018, for aggregate net proceeds to us of \$26.3 million after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, you will experience immediate dilution of \$1.77 per share, representing the difference between our as adjusted net tangible book value per share as of June 30, 2018 after giving effect to this offering and the assumed offering price. See the section entitled "Dilution" below for a more detailed illustration of the dilution you would incur if you participate in this offering.

You may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may at any time offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

We have broad discretion in the use of our cash and cash equivalents, including the net proceeds we receive in this offering, and may not use them effectively.

Our management has broad discretion to use our cash and cash equivalents, including the net proceeds we receive in this offering, to fund our operations and could spend these funds in ways that do not improve our results of operations or enhance the value of our common stock, and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to

[Table of Contents](#)

decline and delay the development of our product candidates. Pending their use to fund our operations, we may invest our cash and cash equivalents, including the net proceeds from this offering, in a manner that does not produce income or that loses value.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the information incorporated by reference in this prospectus contain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act that involve substantial risks and uncertainties. Any statements in this prospectus about the company's future expectations, plans and prospects, including statements about its strategy, future operations, development of its product candidates, the review of strategic alternatives and the outcome of such review and other statements containing the words "believes," "anticipates," "plans," "expects," "estimates," "intends," "predicts," "projects," "targets," "could," "may," and similar expressions, constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995, although not all forward-looking statements include such identifying words.

The forward-looking statements in this prospectus and the information incorporated by reference in this prospectus include, among other things, statements about:

- expectations regarding the timing for the commencement and completion of product development or clinical trials;
- the rate and degree of market acceptance and clinical utility of the company's products;
- the company's commercialization, marketing and manufacturing capabilities and strategy;
- the company's intellectual property position and strategy;
- the company's ability to identify additional products or product candidates with significant commercial potential;
- the company's estimates regarding expenses, future revenue, capital requirements and needs for additional financing;
- expected developments relating to the company's competitors and industry; and
- the impact of government laws and regulations.

Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: the ability to develop commercially viable product formulations; the sufficiency of the company's cash resources; the ability to obtain necessary regulatory and ethics approvals to commence additional clinical trials; whether data from early clinical trials will be indicative of the data that will be obtained from future clinical trials; whether the results of clinical trials will warrant submission for regulatory approval of any investigational product; whether any such submission will receive approval from the FDA or equivalent foreign regulatory agencies and, if the company is able to obtain such approval for an investigational product, whether it will be successfully distributed and marketed. These risks and uncertainties, as well as other risks and uncertainties that could cause the company's actual results to differ significantly from the forward-looking statements contained herein, are described in greater detail under the caption "Risk Factors" in this prospectus and the documents incorporated by reference herein. Any forward-looking statements contained in this prospectus speak only as of the date hereof and not of any future date, and the company expressly disclaims any intent to update any forward-looking statements, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

We estimate that the net proceeds to us from the sale of 6,000,000 shares of common stock offered by us in this offering will be approximately \$26.3 million, based on an assumed public offering price of \$4.75 per share, which is the last reported sale price of our common stock on the Nasdaq Capital Market on August 31, 2018, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Each \$1.00 increase (decrease) in the assumed public offering price of \$4.75 per share, which is the last reported sale price of our common stock on the Nasdaq Capital Market on August 31, 2018, would increase (decrease) the net proceeds to us by approximately \$5.6 million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We may also increase or decrease the number of shares we are offering. Each increase (decrease) of 100,000 shares in the number of shares offered by us would increase (decrease) the net proceeds to us from this offering by approximately \$0.4 million, assuming that the assumed public offering price remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

As of June 30, 2018, we had cash and cash equivalents of approximately \$19.2 million. We intend to use the net proceeds from this offering as follows:

- approximately \$10 million to fund a phase 2 clinical trial evaluating OP-02 as a treatment for OME and as a treatment to prevent chronic OME in children;
- approximately \$10 million to fund a phase 2 clinical trial evaluating OP-02 as a treatment to prevent recurrent AOM in children; and
- the remainder for working capital purposes, including general operating expenses.

Our expected use of net proceeds from this offering represents our current intentions based upon our present plans and business condition. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the closing of this offering or the amounts that we will actually spend on the uses set forth above. The amounts and timing of our actual use of the net proceeds from this offering will vary depending on numerous factors, including the progress of our clinical trials and other development efforts for OP-02 and other factors described in “Risk Factors” beginning on page 6 or incorporated by reference herein, as well as the amount of cash we use in our operations. As a result, our management will have broad discretion in the application of the net proceeds, and investors will be relying on our judgment regarding the application of the net proceeds from this offering. In addition, we might decide to postpone or not pursue clinical trials or preclinical activities if the net proceeds from this offering and the other sources of cash are less than expected.

Pending application of the net proceeds, we intend to invest the net proceeds from this offering in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

CAPITALIZATION

The following table sets forth our cash, cash equivalents and short-term investments and capitalization as of June 30, 2018:

- on an actual basis; and
- on an as-adjusted basis to reflect the issuance and sale by us of 6,000,000 shares of our common stock in this offering at an assumed public offering price of \$4.75 per share, which was the last reported sale price of our common stock on the Nasdaq Capital Market on August 31, 2018, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this information together with our financial statements and related notes and the information under the captions “Selected Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” appearing in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 and Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2018, incorporated by reference in this prospectus. For more details on how you can obtain our Commission reports and other information, you should read the section of the prospectus entitled “Where You Can Find More Information.”

| | As of June 30, 2018 | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------|
| | Actual | As Adjusted |
| | (in thousands, except share data) (unaudited) | |
| Cash, cash equivalents and short-term investments | \$ 19,189 | \$ 45,440 |
| Stockholders’ equity: | | |
| Preferred stock, par value \$0.001 per share—5,000,000 shares authorized; no shares issued or outstanding, actual and as adjusted | — | — |
| Common stock, par value \$0.001 per share—200,000,000 shares authorized, 9,407,024 shares issued and outstanding, actual; 200,000,000 shares authorized, 15,407,024 shares issued and outstanding, as adjusted | 9 | 15 |
| Additional paid-in capital | 55,005 | 81,250 |
| Accumulated deficit | (33,501) | (33,501) |
| Total stockholders’ equity | 21,513 | 47,764 |
| Total capitalization | \$ 21,513 | \$ 47,764 |

The number of shares of common stock issued and outstanding in the table above excludes the following shares as of June 30, 2018:

- 910,761 shares of our common stock issuable upon the exercise of stock options outstanding, at a weighted-average exercise price of \$6.23 per share; and
- 3,507,312 additional shares of our common stock available for future issuance under our 2014 Stock Incentive Plan and Employee Stock Purchase Plan.

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted to the extent of the difference between the public offering price per share of our common stock and the as-adjusted net tangible book value per share of our common stock immediately after this offering.

Net tangible book value per share is determined by dividing our total tangible assets less our total liabilities by the number of shares of common stock outstanding. Our historical net tangible book value as of June 30, 2018 was approximately \$19.6 million, or \$2.09 per share.

Dilution per share to new investors represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the as-adjusted net tangible book value per share of common stock immediately after completion of this offering. After giving effect to the sale of 6,000,000 shares of common stock in this offering by us at an assumed public offering price of \$4.75 per share, which is the last reported sale price of our common stock on the Nasdaq Capital Market on August 31, 2018, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us, our as-adjusted net tangible book value as of June 30, 2018 would have been \$45.9 million, or \$2.98 per share. This represents an immediate increase in net tangible book value of \$0.89 per share to existing stockholders and an immediate dilution of \$1.77 per share to investors participating in this offering, as illustrated in the following table:

| | |
|-----------------------------------------------------------------------------------------|---------------|
| Assumed public offering price per share | \$4.75 |
| Historical net tangible book value per share as of June 30, 2018 | \$2.09 |
| Increase in as-adjusted net tangible book value per share attributable to new investors | <u>0.89</u> |
| As-adjusted net tangible book value per share after this offering | <u>2.98</u> |
| Dilution per share to investors participating in this offering | <u>\$1.77</u> |

Each \$1.00 increase (decrease) in the assumed public offering price of \$4.75 per share, which is the last reported sale price of our common stock on the Nasdaq Capital Market on August 31, 2018, would increase (decrease) the as adjusted net tangible book value by approximately \$5.6 million, or approximately \$0.36 per share, and increase (decrease) the dilution per share to new investors by approximately \$0.64 per share, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase of 100,000 shares in the number of shares offered by us would increase the as adjusted net tangible book value by approximately \$0.4 million, or \$0.01 per share, and the dilution per share to new investors would be approximately \$1.76 per share, assuming that the assumed public offering price remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. Similarly, a decrease of 100,000 shares in the number of shares offered by us would decrease the as adjusted net tangible book value by approximately \$0.4 million, or approximately \$0.01 per share, and the dilution per share to new investors would be approximately \$1.78 per share, assuming that the assumed public offering price remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. The as adjusted information discussed above is illustrative only and will adjust based on the actual public offering price and other terms of this offering determined at pricing.

The foregoing calculations exclude the following shares as of June 30, 2018:

- 910,761 shares of our common stock issuable upon the exercise of stock options outstanding, at a weighted-average exercise price of \$6.23 per share; and

[Table of Contents](#)

- 3,507,312 additional shares of our common stock available for future issuance under our 2014 Stock Incentive Plan and Employee Stock Purchase Plan.

Furthermore, we may choose to raise additional capital through the sale of equity or convertible debt securities due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. New investors will experience further dilution if any of our outstanding options are exercised, new options are issued and exercised under our equity incentive plans or we issue additional shares of common stock, other equity securities or convertible debt securities in the future.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock is intended as a summary only and therefore is not a complete description of our capital stock. This description is based upon, and is qualified by reference to, our certificate of incorporation, our by-laws and applicable provisions of Delaware corporate law. You should read our certificate of incorporation and by-laws, which are filed as exhibits to the registration statement of which this prospectus forms a part, for the provisions that are important to you.

Our authorized capital stock consists of 200,000,000 shares of common stock and 5,000,000 shares of preferred stock. As of June 30, 2018, 9,407,024 shares of common stock were outstanding and no shares of preferred stock were outstanding.

Common Stock

Annual Meeting. Annual meetings of our stockholders are held on the date designated in accordance with our by-laws. Written notice must be mailed to each stockholder entitled to vote not less than ten nor more than 60 days before the date of the meeting. The presence in person or by proxy of the holders of record of a majority of our issued and outstanding shares entitled to vote at such meeting constitutes a quorum for the transaction of business at meetings of the stockholders. Special meetings of the stockholders may be called for any purpose only by the board of directors, and business transacted at any special meetings of stockholders shall be limited to matters relating to the purpose or purposes stated in the notice of such meeting. Except as may be otherwise provided by applicable law, our restated certificate of incorporation or our by-laws, all elections shall be decided by a plurality, and all other questions shall be decided by a majority, of the votes cast by stockholders entitled to vote thereon at a duly held meeting of stockholders at which a quorum is present.

Voting Rights. Each holder of common stock is entitled to one vote for each share held on all matters to be voted upon by stockholders.

Dividends. The holders of common stock, after any preferences of holders of any preferred stock, are entitled to receive dividends when and if declared by the board of directors out of legally available funds.

Liquidation and Dissolution. If we are liquidated or dissolved, the holders of the common stock will be entitled to share in our assets available for distribution to stockholders in proportion to the amount of common stock they own. The amount available for common stockholders is calculated after payment of liabilities. Holders of any preferred stock may be entitled to receive a preferential share of our assets before the holders of the common stock receive any assets.

Other Rights. Holders of the common stock have no right to:

- convert the stock into any other security;
- have the stock redeemed;
- purchase additional stock; or
- maintain their proportionate ownership interest.

The common stock does not have cumulative voting rights. Holders of shares of the common stock are not required to make additional capital contributions.

Transfer Agent and Registrar. Continental Stock Transfer & Trust Company is transfer agent and registrar for the common stock.

[Table of Contents](#)

Preferred Stock

We are authorized to issue “blank check” preferred stock, which may be issued in one or more series upon authorization of our board of directors. Our board of directors is authorized to fix the designation of the series, the number of authorized shares of the series, dividend rights and terms, conversion rights, voting rights, redemption rights and terms, liquidation preferences and any other rights, powers, preferences and limitations applicable to each series of preferred stock. The authorized shares of our preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange on which our securities may be listed. If the approval of our stockholders is not required for the issuance of shares of our preferred stock, our board may determine not to seek stockholder approval.

A series of our preferred stock could, depending on the terms of such series, impede the completion of a merger, tender offer or other takeover attempt. Our board of directors will make any determination to issue preferred shares based upon its judgment as to the best interests of our stockholders. Our directors, in so acting, could issue preferred stock having terms that could discourage an acquisition attempt through which an acquirer may be able to change the composition of our board of directors, including a tender offer or other transaction that some, or a majority, of our stockholders might believe to be in their best interests or in which stockholders might receive a premium for their stock over the then-current market price of the stock.

Provisions of Our Certificate of Incorporation and By-laws and Delaware Law That May Have Anti-Takeover Effects

Staggered Board; Removal of Directors

Our certificate of incorporation and by-laws divide our board of directors into three classes with staggered three-year terms. In addition, a director is only able to be removed for cause and only by the affirmative vote of the holders of at least 75% of the votes that all of our stockholders would be entitled to cast in an annual election of directors. Any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may only be filled by vote of a majority of our directors then in office. The classification of our board of directors and the limitations on the removal of directors and filling of vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company.

Stockholder Action by Written Consent; Special Meetings

Our certificate of incorporation provides that any action required or permitted to be taken by our stockholders must be effected at a duly called annual or special meeting of such holders and may not be effected by any consent in writing by such holders. Our certificate of incorporation and by-laws also provide that, except as otherwise required by law, special meetings of our stockholders can only be called by our board of directors.

Advance Notice Requirements for Stockholder Proposals

Our by-laws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of persons for election to our board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of our board of directors or by a stockholder of record on the record date for the meeting who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder’s intention to bring such business before the meeting. These provisions could have the effect of delaying until the next stockholder meeting stockholder actions that are favored by the holders of a majority of our outstanding voting securities.

[Table of Contents](#)

Delaware Business Combination Statute

We are subject to Section 203 of the Delaware General Corporation Law. Subject to certain exceptions, Section 203 prevents a publicly-held Delaware corporation from engaging in a “business combination” with any “interested stockholder” for three years following the date that the person became an interested stockholder, unless the interested stockholder attained such status with the approval of our board of directors or unless the business combination is approved in a prescribed manner. A “business combination” includes, among other things, a merger or consolidation involving us and the “interested stockholder” and the sale of more than 10% of our assets. In general, an “interested stockholder” is any entity or person beneficially owning 15% or more of our outstanding voting stock and any entity or person affiliated with or controlling or controlled by such entity or person.

Amendment of Certificate of Incorporation and By-laws

The Delaware General Corporation Law provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation’s certificate of incorporation or by-laws, unless a corporation’s certificate of incorporation or by-laws, as the case may be, requires a greater percentage. Our by-laws may be amended or repealed by a majority vote of our board of directors or by the affirmative vote of the holders of at least 75% of the votes that all of our stockholders would be entitled to cast in any annual election of directors. In addition, the affirmative vote of the holders of at least 75% of the votes that all of our stockholders would be entitled to cast in any annual election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our certificate of incorporation described above under “— Staggered Board; Removal of Directors” and “—Stockholder Action by Written Consent; Special Meetings.”

UNDERWRITING (CONFLICTS OF INTEREST)

Piper Jaffray & Co., or Piper Jaffray, is acting as representative of each of the underwriters named below. Subject to the terms and conditions set forth in an underwriting agreement among us and the underwriters, we have agreed to sell to the underwriters, and the underwriters have agreed, severally and not jointly, to purchase from us, the number of shares of our common stock set forth opposite its name below.

| <u>Underwriters</u> | <u>Number of Shares</u> |
|-------------------------------|-----------------------------|
| Piper Jaffray & Co. | |
| Ladenburg Thalmann & Co. Inc. | |
| LifeSci Capital LLC | |
| Total | <u>6,000,000</u> |

Subject to the terms and conditions set forth in the underwriting agreement, the underwriters have agreed, severally and not jointly, to purchase all of the shares sold under the underwriting agreement if any of these shares are purchased. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased or the underwriting agreement may be terminated.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act relating to losses or claims resulting from material misstatements in or omissions from this prospectus, the registration statement of which this prospectus is a part, certain free writing prospectuses that may be used in the offering and in any marketing materials used in connection with this offering and to contribute to payments the underwriters may be required to make in respect of those liabilities.

The underwriters are offering the shares, subject to prior sale, when, as and if issued to and accepted by them, subject to approval of legal matters by their counsel, including the validity of the shares, and other conditions contained in the underwriting agreement, such as the receipt by the underwriters of officers' certificates and legal opinions. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

Commissions and Discounts

The representative has advised us that the underwriters propose initially to offer the shares to the public at the public offering price set forth on the cover page of this prospectus and to dealers at that price less a concession not in excess of \$ _____ per share. After the initial offering, the public offering price, concession or any other term of this offering may be changed.

We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to 900,000 additional shares of our common stock at the public offering price listed on the cover page of this prospectus, less underwriting discounts and commissions. To the extent the option is exercised, each underwriter will become obligated, subject to certain conditions, to purchase approximately the same percentage of the additional shares of common stock as the number listed next to the underwriter's name in the preceding table bears to the total number of shares of common stock listed next to the names of all underwriters in the table above.

The following table shows the public offering price, underwriting discounts and commissions and proceeds before expenses to us. The information assumes either no exercise or full exercise by the underwriters of their option to purchase additional shares.

[Table of Contents](#)

| | <u>Per Share</u> | <u>Without Option</u> | <u>With Option</u> |
|---------------------------------------------------|------------------|---------------------------|------------------------|
| Public offering price | \$ | \$ | \$ |
| Underwriting discounts and commissions paid by us | \$ | \$ | \$ |
| Proceeds to us, before expenses | \$ | \$ | \$ |

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately \$250,000. We have also agreed to reimburse the underwriters for certain of their expenses in an amount not to exceed \$25,000 in connection with the clearance of this offering with the Financial Industry Regulatory Authority, as set forth in the underwriting agreement.

Listing

Our common stock is listed on the Nasdaq Capital Market under the trading symbol “NVUS.”

No Sales of Similar Securities

We have agreed that we will not offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, or file with the SEC a registration statement under the Securities Act relating to, any of our shares of common stock or securities convertible into or exchangeable or exercisable for any of our shares of common stock, or publicly disclose the intention to make any offer, sale, pledge, disposition or filing, without the prior written consent of Piper Jaffray for a period of 90 days after the date of this prospectus, subject to specified limited exceptions.

Our officers and directors and certain of our stockholders have agreed, subject to specified limited exceptions, that they will not offer, sell, contract to sell, pledge or otherwise dispose of, directly or indirectly, any of our shares of common stock or securities convertible into or exchangeable or exercisable for any of our shares of common stock, enter into a transaction that would have the same effect, or enter into any swap, hedge or other arrangement that transfers, in whole or in part, any of the economic consequences of ownership of our shares of common stock, whether any of these transactions are to be settled by delivery of our shares of common stock or other securities, in cash or otherwise, or publicly disclose the intention to make any offer, sale, pledge or disposition, or to enter into any transaction, swap, hedge or other arrangement, without, in each case, the prior written consent of Piper Jaffray for a period of 90 days after the date of this prospectus.

Piper Jaffray may, in its sole discretion and at any time or from time to time before the termination of the 90-day restricted period, release all or any portion of the securities subject to lock-up agreements. There are no existing agreements between the underwriters and any of our stockholders who will execute a lock-up agreement providing consent to the sale of shares prior to the expiration of the 90-day restricted period.

Price Stabilization, Short Positions and Penalty Bids

Until the distribution of the shares is completed, SEC rules may limit underwriters and selling group members from bidding for and purchasing shares of our common stock. However, the representatives may engage in transactions that stabilize the price of our common stock, such as bids or purchases to peg, fix or maintain that price. In connection with this offering, the underwriters may purchase and sell shares of our common stock in the open market. These transactions may include short sales, purchases on the open market to cover positions created by short sales and stabilizing transactions. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in this offering. “Covered” short sales are sales made in an amount not greater than the underwriters’ option to purchase additional shares described above. The underwriters may close out any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open

Table of Contents

market. In determining the source of shares to close out the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase shares through the option to purchase additional shares. "Naked" short sales are sales in excess of the option to purchase additional shares. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of our common stock in the open market after pricing that could adversely affect investors who purchase in this offering. Stabilizing transactions consist of various bids for or purchases of shares of our common stock made by the underwriters in the open market prior to the closing of this offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock may be higher than the price that might otherwise exist in the open market. The underwriters may conduct these transactions on Nasdaq, in the over-the-counter market or otherwise.

Neither we nor any of the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, neither we nor any of the underwriters make any representation that the representatives will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Electronic Offer, Sale and Distributions of Shares

In connection with this offering, certain of the underwriters or securities dealers may distribute prospectuses by electronic means, such as e-mail. In addition, one or more of the underwriters may facilitate Internet distribution for this offering to certain of their Internet subscription customers. Any such underwriter may allocate a limited number of shares for sale to its online brokerage customers. An electronic prospectus is available on the Internet websites maintained by any such underwriter. Other than the prospectus in electronic format, the information on the websites of any such underwriter is not part of this prospectus.

Other Relationships

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their affiliates have engaged in, and may in the future engage in, investment banking and other commercial dealings in the ordinary course of business with us or our affiliates. They have received, or may in the future receive, customary fees and commissions for these transactions.

In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of the issuer. The underwriters and their respective affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or

[Table of Contents](#)

instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Conflicts of Interest

Because affiliates of LifeSci Capital LLC beneficially own an aggregate of 1,151,088 shares of our common stock, or approximately 12.2%, LifeSci Capital LLC is deemed to have a conflict of interest under Financial Industry Regulatory Authority (which we refer to as “FINRA”) Rule 5121. Accordingly, this offering will be conducted in accordance with FINRA Rule 5121, which requires that Piper Jaffray & Co., the representative of the underwriters, does not have a conflict of interest, is not an affiliate of LifeSci Capital and meets the requirements of paragraph (f)(12)(E) of Rule 5121. LifeSci Capital LLC is our investor relations firm. We have paid or will pay to LifeSci Capital LLC approximately \$150,000 for their services as our investor relations firm during the period beginning 180 days prior to the original filing of the registration statement of which this prospectus forms a part through the 90 days after the pricing of this offering. Pursuant to a Master Services Agreement (the “Agreement”) dated April 1, 2018 between the Company and LifeSci Advisors, LLC (“LSA”), a commonly-owned affiliate of LifeSci Capital LLC, the Company pays LSA a fee of \$10,000 per month. In the event that the Company completes an equity or debt offering with net proceeds in excess of \$10 million during the term of the Agreement, the Company will pay LSA a one-time “catch-up” payment equal to \$5,000 multiplied by the number of months between the time of the completion of the offering and the effective date of the Agreement. After the completion of any such offering, the Company shall pay LSA a monthly fee of \$15,000 for the remainder of the agreement.

Selling Restrictions

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a Relevant Member State) an offer to the public of any shares of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- (a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- (b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or
- (c) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an “offer to the public” in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase any shares of our common stock, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression “Prospectus Directive” means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression “2010 PD Amending Directive” means Directive 2010/73/EU.

Table of Contents

United Kingdom

Each underwriter has represented and agreed that:

- (a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 (the FSMA)) received by it in connection with the issue or sale of the shares of our common stock in circumstances in which Section 21(1) of the FSMA does not apply to us; and
- (b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares of our common stock in, from or otherwise involving the United Kingdom.

Canada

The shares of our common stock may be sold 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 shares of our common stock 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 the 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 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Hong Kong

The common shares may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong), or (ii) to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a "prospectus" within the meaning of the Companies Ordinance (Cap. 32, Laws of Hong Kong) and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the laws of Hong Kong) other than with respect to common shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571, Laws of Hong Kong) and any rules made thereunder.

Israel

This document does not constitute a prospectus under the Israeli Securities Law, 5728-1968, or the Securities Law, and has not been filed with or approved by the Israel Securities Authority. In the State of

Table of Contents

Israel, this prospectus is being distributed only to, and is directed only at, and any offer of the securities and is directed only at (i) a limited number of persons in accordance with Section 15A(a)(1) of the Securities Law or (ii) investors listed in the first addendum, or the Addendum, to the Securities Law, consisting primarily of joint investment in trust funds, provident funds, insurance companies, banks, portfolio managers, investment advisors, members of the Tel Aviv Stock Exchange, underwriters, venture capital funds, entities with equity in excess of NIS 50 million and “qualified individuals”, each as defined in the Addendum (as it may be amended from time to time), collectively referred to as qualified investors (in each case purchasing for their own account or, where permitted under the Addendum, for the accounts of their clients who are investors listed in the Addendum). Qualified investors will be required to submit written confirmation that they fall within the scope of the Addendum, are aware of the meaning of the Addendum and agree to it.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the common shares may not be circulated or distributed, nor may the common shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore (the SFA), (ii) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to compliance with conditions set forth in the SFA.

Where the common shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

shares, debentures and units of shares and debentures of that corporation or the beneficiaries’ rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the common shares pursuant to an offer made under Section 275 of the SFA except:

- (a) to an institutional investor (for corporations, under Section 274 of the SFA) or to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer that is made on terms that such shares, debentures and units of shares and debentures of that corporation or such rights and interest in that trust are acquired at a consideration of not less than \$200,000 (or its equivalent in a foreign currency) for each transaction, whether such amount is to be paid for in cash or by exchange of securities or other assets, and further for corporations, in accordance with the conditions specified in Section 275 of the SFA;
- (b) where no consideration is or will be given for the transfer; or
- (c) where the transfer is by operation of law.

Table of Contents

Switzerland

The common shares may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange (the 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 or marketing material relating to the common shares or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, or the common shares 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 common shares will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of common shares has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes (CISA). Accordingly, no public distribution, offering or advertising, as defined in CISA, its implementing ordinances and notices, and no distribution to any non-qualified investor, as defined in CISA, its implementing ordinances and notices, shall be undertaken in or from Switzerland, and the investor protection afforded to acquirers of interests in collective investment schemes under CISA does not extend to acquirers of common shares.

United Arab Emirates

This offering has not been approved or licensed by the Central Bank of the United Arab Emirates (the UAE), Securities and Commodities Authority of the UAE and/or any other relevant licensing authority in the UAE including any licensing authority incorporated under the laws and regulations of any of the free zones established and operating in the territory of the UAE, in particular the Dubai Financial Services Authority (DFSA), a regulatory authority of the Dubai International Financial Centre (DIFC). The offering does not constitute a public offer of securities in the UAE, DIFC and/or any other free zone in accordance with the Commercial Companies Law, Federal Law No 8 of 1984 (as amended), DFSA Offered Securities Rules and NASDAQ Dubai Listing Rules, accordingly, or otherwise. The common shares may not be offered to the public in the UAE and/or any of the free zones.

The common shares may be offered and issued only to a limited number of investors in the UAE or any of its free zones who qualify as sophisticated investors under the relevant laws and regulations of the UAE or the free zone concerned.

France

This prospectus (including any amendment, supplement or replacement thereto) is not being distributed in the context of a public offering in France within the meaning of Article L. 411-1 of the French Monetary and Financial Code (Code monétaire et financier).

This prospectus has not been and will not be submitted to the French Autorité des marchés financiers (the AMF) for approval in France and accordingly may not and will not be distributed to the public in France.

Pursuant to Article 211-3 of the AMF General Regulation, French residents are hereby informed that:

- (a) the transaction does not require a prospectus to be submitted for approval to the AMF;
- (b) persons or entities referred to in Point 2°, Section II of Article L.411-2 of the Monetary and Financial Code may take part in the transaction solely for their own account, as provided in Articles D. 411-1, D. 734-1, D. 744-1, D. 754-1 and D. 764-1 of the Monetary and Financial Code; and

[Table of Contents](#)

- (c) the financial instruments thus acquired cannot be distributed directly or indirectly to the public 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 Monetary and Financial Code.

This prospectus is not to be further distributed or reproduced (in whole or in part) in France by the recipients of this prospectus. This prospectus has been distributed on the understanding that such recipients will only participate in the issue or sale of our common stock for their own account and undertake not to transfer, directly or indirectly, our common stock to the public in France, other than in compliance with all applicable laws and regulations and in particular with Articles L. 411-1 and L. 411-2 of the French Monetary and Financial Code.

LEGAL MATTERS

The validity of the shares of common stock offered hereby will be passed upon for us by Gibson, Dunn & Crutcher LLP, San Francisco, California. Certain legal matters relating to this offering will be passed upon for the underwriters by Cooley LLP, San Diego, California.

EXPERTS

Novus Therapeutics, Inc.

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements as of and for the year ended December 31, 2017, included in our Annual Report on Form 10-K for the year ended December 31, 2017, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

Otic Pharma, Ltd.

The audited consolidated financial statements of Otic Pharma, Ltd. and its subsidiary incorporated in this prospectus by reference to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 (which comprise the balance sheet as of December 31, 2016, and the related Statements of Operations, Changes in Shareholders Deficit and Cash Flows for the year then ended, and the related notes to the financial statements) have been audited by Brightman, Almagor Zohar & Co., a member of Deloitte Touche Tohmatsu Limited, as stated in their report incorporated by reference and given upon the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at <http://www.sec.gov>. Copies of certain information filed by us with the SEC are also available on our website at www.novustherapeutics.com. Our website is not a part of this prospectus and is not incorporated by reference in this prospectus. You may also read and copy any document we file at the SEC's Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room.

This prospectus is part of a registration statement that we filed with the SEC. This prospectus omits some information contained in the registration statement in accordance with SEC rules and regulations. You should review the information and exhibits in the registration statement for further information about us and our subsidiaries and the securities we are offering. Statements in this prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to these filings. You should review the complete document to evaluate these statements.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference in this prospectus much of the information we file with the SEC, which means that we can disclose important information to you by referring you to those publicly available documents. The information that we incorporate by reference in this prospectus is considered to be part of this prospectus. 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 look at 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.

Any statement contained in any document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded, for purposes of this prospectus, to the extent that a statement contained in or omitted from this prospectus, or in any other subsequently filed document that also is or is deemed to be incorporated by reference herein, modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus. We incorporate by reference the documents listed below which have been filed by us:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2017;
- Our Definitive Proxy Statement on Schedule 14A filed on April 30, 2018;
- Our Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2018 and June 30, 2018;
- Our Current Reports on Form 8-K filed March 12, 2018 and June 14, 2018; and
- The description of our common stock contained in our Registration Statement on Form 8-A filed with the SEC on September 12, 2014, as amended on June 23, 2017, as well as any subsequent amendments or reports filed for the purpose of updating such description.

All documents we file with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any report or documents that is not deemed “filed” under such provisions: (1) on or after the date of filing of the registration statement containing this prospectus and prior to the effectiveness of the registration statement and (2) on or after the date of this prospectus until the earlier of the date on which all of the securities registered hereunder have been sold or the registration statement of which this prospectus is a part has been withdrawn, shall be deemed incorporated by reference in this prospectus and to be a part of this prospectus from the date of filing of those documents.

Nothing in this prospectus shall be deemed to incorporate information furnished but not filed with the SEC pursuant to Item 2.02 or 7.01 of Form 8-K.

Upon written or oral request, we will provide without charge to each person to whom a copy of the prospectus is delivered a copy of the documents incorporated by reference herein (other than exhibits to such documents unless such exhibits are specifically incorporated by reference herein). You may request a copy of these filings, at no cost, by writing or telephoning us at the address set forth below. We have authorized no one to provide you with any information that differs from that contained in this prospectus. Accordingly, you should not rely on any information that is not contained in this prospectus. You should not assume that the information in this prospectus is accurate as of any date other than the date of the front cover of this prospectus.

Novus Therapeutics, Inc.
19900 MacArthur Boulevard, Suite 550
Irvine, California 92612
Attn: Investor Relations
(949) 238-8090

6,000,000 Shares



NOVUS THERAPEUTICS, INC.

Common Stock

PROSPECTUS

Piper Jaffray

Ladenburg Thalmann

LifeSci Capital

, 2018

PART II
Information Not Required in Prospectus

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the costs and expenses, other than the underwriting discounts and commissions, payable by the registrant in connection with the sale of common stock being registered. All amounts are estimates except for the SEC registration fee and the FINRA filing fee.

| <u>Item</u> | <u>Amount to be paid</u> |
|----------------------------------|------------------------------|
| SEC registration fee | \$ 4,296 |
| FINRA filing fee | 5,675 |
| Printing and engraving expenses | 25,000 |
| Legal fees and expenses | 100,000 |
| Accounting fees and expenses | 50,000 |
| Transfer Agent fees and expenses | 25,000 |
| Miscellaneous expenses | 43,929 |
| Total | <u>\$ 253,900</u> |

Item 14. Indemnification of Directors and Officers.

Section 102 of the Delaware General Corporation Law permits a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for a breach of fiduciary duty as a director, except where the director breached his duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our certificate of incorporation provides that none of our directors shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty as director, notwithstanding any provision of law imposing such liability, except to the extent that the Delaware General Corporation Law prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty.

Section 145 of the Delaware General Corporation Law provides that a corporation has the power to indemnify a director, officer, employee or agent of the corporation and certain other persons serving at the request of the corporation in related capacities against expenses (including attorneys' fees), judgments, fines and amounts paid in settlements actually and reasonably incurred by the person in connection with an action, suit or proceeding to which he is or is threatened to be made a party by reason of such position, if such person acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation and, in any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful, except that, in the case of actions brought by or in the right of the corporation, no indemnification shall be made with respect to any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or other adjudicating court determines that, despite the adjudication of liability but in view of all of the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

Our certificate of incorporation provides that we will indemnify each person who was or is a party or threatened to be made a party to or is involved in any threatened, pending or completed action, suit or proceeding by reason of the fact that he or she is or was a director or officer of us or is or was serving at

[Table of Contents](#)

our request as a director or officer of another corporation, partnership, joint venture, trust or other enterprise to the fullest extent permitted by the Delaware General Corporation Law. Our certificate of incorporation provides that expenses must be advanced to these indemnitees under certain circumstances.

We have entered into indemnification agreements with each of our directors and officers. Each indemnification agreement provides that we will, among other things, indemnify our directors and executive officers for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or officer in any action or proceeding arising out of his or her service as one of our directors or officers, or any of our subsidiaries or any other company or enterprise to which the person provides services at our request.

In addition, we maintain standard policies of insurance under which coverage is provided to our directors and officers against losses arising from claims made by reason of breach of duty or other wrongful act, and to us with respect to payments which may be made by us to such directors and officers pursuant to the above indemnification provisions or otherwise as a matter of law. In any underwriting agreement we enter into in connection with the sale of common stock being registered hereby, the underwriters will agree to indemnify, under certain conditions, us, our directors, our officers and persons who control us within the meaning of the Securities Act of 1933, as amended (the "Securities Act") against certain liabilities.

Item 15. Recent Sales of Unregistered Securities.

In the three years preceding the filing of this registration statement, we have issued the following securities that were not registered under the Securities Act.

On May 10, 2017, pursuant to a stock purchase agreement (the "Stock Purchase Agreement") with certain purchasers named therein, we sold an aggregate of 400,400 shares of our common stock at a price of \$9.99 per share for an aggregate purchase price of approximately \$4.0 million. Such sales were exempt from registration under Section 4(a)(2) and Regulation D and Regulation S under the Securities Act, and the rules promulgated thereunder. All of the purchasers of unregistered securities for which we relied on Section 4(a)(2) and/or Regulation D represented that they were accredited investors as defined under the Securities Act. All of the purchasers of unregistered securities for which we relied on Regulation S represented that they were non-U.S. purchasers. We claimed such exemptions on the basis that (a) the purchasers in each case represented that they intended to acquire the securities for investment only and not with a view to the distribution thereof and that they either received adequate information about the registrant or had access, through employment or other relationships, to such information and (b) appropriate legends were affixed to the stock certificates issued in such transactions.

Item 16. Exhibits and Financial Statement Schedules.

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|---------|--------------------|
| | | Form | File No. | Exhibit | Filing Date |
| 1.1** | Form of Underwriting Agreement | | | | |
| 2.1 | Amended and Restated Share Purchase Agreement dated as of March 2, 2017, by and among the Registrant, Otic Pharma, Ltd., and shareholders of Otic Pharma, Ltd., named therein. | 10-K | 001-36620 | 2.1 | March 3, 2017 |
| 3.1 | Restated Certificate of Incorporation of Novus Therapeutics, Inc., a Delaware corporation, dated September 22, 2014 | 8-K | 001-36620 | 3.1 | September 26, 2014 |

Table of Contents

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|---------|----------------|
| | | Form | File No. | Exhibit | Filing Date |
| 3.2 | Certificate of Amendment to Certificate of Incorporation of Novus Therapeutics, Inc. (effecting, among other things a reverse stock-split), filed with the Secretary of the State of Delaware on May 9, 2017 | 8-K | 001-36620 | 3.1 | May 15, 2017 |
| 3.3 | Certificate of Amendment to Certificate of Incorporation of Novus Therapeutics, Inc. (effecting, among other things a change in the corporation's name to "Novus Therapeutics, Inc."), filed with the Secretary of the State of Delaware on May 9, 2017 | 8-K | 001-36620 | 3.2 | May 15, 2017 |
| 3.4 | Amended and Restated Bylaws of Novus Therapeutics, Inc. | 8-A/A | 001-36620 | 3.4 | June 23, 2017 |
| 4.1 | Form of Common Stock Certificate | 8-A/A | 001-36620 | 4.1 | June 23, 2017 |
| 5.1** | Opinion of Gibson, Dunn & Crutcher LLP | | | | |
| 10.1 | Registration Rights Agreement, dated May 10, 2017, by and among the Company and the Purchasers | 8-K | 001-36620 | 10.1 | May 15, 2017 |
| 10.2 | Form of Indemnification Agreement between Novus Therapeutics, Inc. and each of its directors and executive officers | 10-Q | 001-36620 | 10.1 | August 9, 2017 |
| 10.3 | Lease Agreement, dated as of September 2, 2015, by and between The Irvine Company LLC and Otic Pharma, Inc. | 10-Q | 001-36620 | 10.2 | August 9, 2017 |
| 10.4 | Executive Employment Agreement, dated July 15, 2015, between Otic Pharma, Inc., and Gregory J. Flesher | 10-Q | 001-36620 | 10.3 | August 9, 2017 |
| 10.5† | Exclusive License Agreement, dated November 1, 2015, between Scientific Development and Research, Inc. and Otodyne, Inc., on the one hand, and Oticpharma, Inc., on the other hand | 10-Q | 001-36620 | 10.4 | August 9, 2017 |
| 10.6 | Offer of Employment, dated July 1, 2017, from Novus Therapeutics, Inc. to Jon Kuwahara | 10-Q | 001-36620 | 10.5 | August 9, 2017 |
| 10.7 | Management Continuity Agreement, dated August 7, 2017, between Novus Therapeutics, Inc. and Gregory J. Flesher | 10-Q | 001-36620 | 10.6 | August 9, 2017 |
| 10.8 | Management Continuity Agreement, dated August 7, 2017, between Novus Therapeutics, Inc. and Jon S. Kuwahara | 10-Q | 001-36620 | 10.7 | August 9, 2017 |

Table of Contents

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|---------|-----------------|
| | | Form | File No. | Exhibit | Filing Date |
| 10.9 | Equity Distribution Agreement, dated as of August 21, 2017, between Novus Therapeutics, Inc. and Piper Jaffray & Co. | 8-K | 001-36620 | 1.1 | August 22, 2017 |
| 10.10 | Otic Pharma Ltd. Global Share Incentive Plan (2012) | 10-K | 001-36620 | 10.10 | April 2, 2018 |
| 10.11 | Tokai Pharmaceuticals, Inc. 2007 Stock Incentive Plan | 10-K | 001-36620 | 10.11 | April 2, 2018 |
| 10.12 | Tokai Pharmaceuticals, Inc. 2014 Stock Incentive Plan | 10-K | 001-36620 | 10.12 | April 2, 2018 |
| 21.1 | Subsidiaries of the Registrant | 10-K | 001-36620 | 21.1 | April 2, 2018 |
| 23.1** | Consent of Ernst & Young LLP, independent registered public accounting firm | | | | |
| 23.2** | Consent of Brightman, Almagor Zohar & Co., a member of Deloitte Touche Tohmatsu Limited | | | | |
| 23.3** | Consent of Gibson, Dunn & Crutcher LLP (included in Exhibit 5.1) | | | | |
| 24.1 | Power of Attorney (previously filed) | | | | |
| ** | Filed herewith | | | | |
| † | Portions of this exhibit have been omitted and filed separately with the Securities and Exchange Commission pursuant to a request for confidential treatment. | | | | |

Item 17. Undertakings.

(a) 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.

(b) The undersigned registrant hereby undertakes that:

- (1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b) (1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

[Table of Contents](#)

- (2) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus 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.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 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 Securities and Exchange Commission such indemnification is against public policy as expressed in the 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 Act and will be governed by the final adjudication of such issue.

[Table of Contents](#)

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant has duly caused this Amendment No. 1 to Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in Irvine, California, on September 4, 2018.

NOVUS THERAPEUTICS, INC.

By: /s/ GREGORY J. FLESHER
Name: **Gregory J. Flesher**
Title: **Chief Executive Officer**

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/ GREGORY J. FLESHER </u> Gregory J. Flesher | Chief Executive Officer and Director (Principal Executive Officer) | September 4, 2018 |
| <u> /s/ JON S. KUWAHARA </u> Jon S. Kuwahara | Senior Vice President Finance & Administration (Principal Financial Officer and Principal Accounting Officer) | September 4, 2018 |
| <u> * </u> Keith A. Katkin | Director, Chairman of the Board of Directors | September 4, 2018 |
| <u> * </u> Gary A. Lyons | Director | September 4, 2018 |
| <u> * </u> Erez Chimovits | Director | September 4, 2018 |
| <u> * </u> Cheryl L. Cohen | Director | September 4, 2018 |
| <u> * </u> John S. McBride | Director | September 4, 2018 |

*By: /s/ GREGORY J. FLESHER
Gregory J. Flesher
Attorney-in-fact

[•] Shares

Novus Therapeutics, Inc.

Common Stock

UNDERWRITING AGREEMENT

[•], 2018

PIPER JAFFRAY & CO.
As Representative of the several
Underwriters named in Schedule I hereto

c/o Piper Jaffray & Co.
800 Nicollet Mall
Minneapolis, Minnesota 55402

Ladies and Gentlemen:

Novus Therapeutics, Inc., a Delaware corporation (the "**Company**"), proposes to sell to the several Underwriters named in Schedule I hereto (the "**Underwriters**") an aggregate of [•] shares (the "**Firm Shares**") of Common Stock, \$0.001 par value per share (the "**Common Stock**"), of the Company. The Company has also granted to the several Underwriters an option to purchase up to [•] additional shares of Common Stock, respectively, on the terms and for the purposes set forth in Section 3 hereof (the "**Option Shares**"). The Firm Shares and any Option Shares purchased pursuant to this Underwriting Agreement (this "**Agreement**") are herein collectively called the "**Securities**." To the extent there are no additional Underwriters listed on Schedule I other than you, the term Representatives as used herein shall mean you, as Underwriters, and the terms Representatives and Underwriters shall mean either the singular or plural as the context requires.

The Company hereby confirms its agreement with respect to the sale of the Securities to the several Underwriters, for whom Piper Jaffray & Co. is acting as the representative (the "**Representative**").

1. **Registration Statement and Prospectus.** A registration statement on Form S-1 (File No. 333-226467) with respect to the Securities, including a preliminary form of prospectus, has been prepared by the Company in conformity with the requirements of the Securities Act of 1933, as amended (the "**Securities Act**" or the "**Act**"), and the rules and regulations ("**Rules and Regulations**") of the Securities and Exchange Commission (the "**Commission**") thereunder and has been filed with the Commission. Such registration statement, including the amendments, exhibits and schedules thereto, as of the time it became effective, including the Rule 430A Information (as defined below), is referred to herein at the "**Registration Statement**". The Company will prepare and file a prospectus pursuant to Rule 424(b) of the Rules and Regulations that discloses the information previously omitted from the prospectus in the Registration Statement in reliance upon Rule 430A of the Rules and Regulations, which information will be deemed retroactively to be a part of the

Registration Statement in accordance with Rule 430A of the Rules and Regulations ("**Rule 430A Information**"). If the Company has elected to rely upon Rule 462(b) of the Rules and Regulations to increase the size of the offering registered under the Act, the Company will prepare and file with the Commission a registration statement with respect to such increase pursuant to Rule 462(b) of the Rules and Regulations (such registration statement, including the contents of the Registration Statement incorporated by reference therein is the "**Rule 462(b) Registration Statement**"). References herein to the "**Registration Statement**" will be deemed to include the Rule 462(b) Registration Statement at and after the time of filing of the Rule 462(b) Registration Statement. "**Preliminary Prospectus**" means any prospectus included in the Registration Statement prior to the effective time of the Registration Statement, any prospectus filed with the Commission pursuant to Rule 424(a) under the Rules and Regulations and each prospectus that omits Rule 430A Information used after the effective time of the Registration Statement. "**Prospectus**" means the prospectus that discloses the public offering price and other final terms of the Securities and the offering and otherwise satisfies Section 10(a) of the Act. All references in this Agreement to the Registration Statement, any Preliminary Prospectus, the Prospectus or any amendment or supplement to any of the foregoing, is deemed to include the copy filed with the Commission pursuant to its Electronic Data Gathering, Analysis and Retrieval System or any successor system thereto ("**EDGAR**").

2. **Representations and Warranties of the Company.**

(a) Representations and Warranties of the Company. The Company represents and warrants to, and agrees with, the several Underwriters that as of the date of this Agreement and at each of the First Closing Date and the Second Closing Date (as if made at such Closing Date), unless such representation, warranty or agreement specifies a different time:

(i) Registration Statement and Prospectuses. The Registration Statement and any post-effective amendment thereto has become effective under the Act. No stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto has been issued, and no proceeding for that purpose has been initiated or, to the Company's knowledge, threatened by the Commission. No order preventing or suspending the use of any Preliminary Prospectus or the Prospectus (or any supplement thereto) has been issued by the Commission and no proceeding for that purpose has been initiated or, to the Company's knowledge, threatened by the Commission. As of the time each part of the Registration Statement (or any post-effective amendment thereto) became or becomes effective, such part conformed or will conform in all material respects to the requirements of the Act and the Rules and Regulations. Upon the filing or first use within the meaning of the Rules and Regulations, each Preliminary Prospectus and the Prospectus (or any supplement to either) conformed or will conform in all material respects to the requirements of the Act and the Rules and Regulations.

(ii) Accurate Disclosure. Each Preliminary Prospectus, at the time of filing thereof or the time of first use within the meaning of the Rules and Regulations, did 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, in the light of the circumstances under which they were made, not misleading. Neither the Registration Statement nor any amendment thereto, at the effective time of each part thereof, at the First Closing Date (as defined below) or at the Second Closing Date (as defined below), contained, contains or will

contain an untrue statement of a material fact or omitted, omits or will omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. As of the Time of Sale (as defined below), neither (A) the Time of Sale Disclosure Package (as defined below) nor (B) any issuer free writing prospectus (as defined below), when considered together with the Time of Sale Disclosure Package, included an untrue statement of a material fact or omitted 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. Neither the Prospectus nor any supplement thereto, as of its issue date, at the time of any filing with the Commission pursuant to Rule 424(b) of the Rules and Regulations, at the First Closing Date or at the Second Closing, included, includes or will include an untrue statement of a material fact or omitted, omits or will 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 representations and warranties in this Section 2(a)(ii) shall not apply to statements in or omissions from any Preliminary Prospectus, the Registration Statement (or any amendment thereto), the Time of Sale Disclosure Package or the Prospectus (or any supplement thereto) made in reliance upon, and in conformity with, written information furnished to the Company by you, or by any Underwriter through you, specifically for use in the preparation of such document, it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 6(e).

Each reference to an “*issuer free writing prospectus*” herein means an issuer free writing prospectus as defined in Rule 433 of the Rules and Regulations.

“*Time of Sale Disclosure Package*” means the Preliminary Prospectus dated [●], 2018, any free writing prospectus set forth on Schedule III and the information on Schedule IV, all considered together.

Each reference to a “*free writing prospectus*” herein means a free writing prospectus as defined in Rule 405 of the Rules and Regulations.

“*Time of Sale*” means [●] [a./p.]m. (Eastern time) on the date of this Agreement.

(iii) Issuer Free Writing Prospectuses.

(A) Each issuer free writing prospectus, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Securities or until any earlier date that the Company notified or notifies the Representative as described in Section 4(a)(iii)(B), did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, any Preliminary Prospectus or the Prospectus. The foregoing sentence does not apply to statements in or omissions from any issuer free writing prospectus based upon and in conformity with written information furnished to the Company by you or by any Underwriter through you specifically for use therein; it being understood and agreed that the only such information furnished by any Underwriter consists of the information described as such in Section 6(e).

(B) At the time of filing the Registration Statement and any post-effective amendment thereto, and at the date hereof, the Company was not and is not an “ineligible issuer,” as defined in Rule 405 of the Rules and Regulations, without taking account of any determination by the Commission pursuant to Rule 405 of the Rules and Regulations that it is not necessary that the Company be considered an ineligible issuer.

(C) Each issuer free writing prospectus satisfied, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Securities, all other conditions to use thereof as set forth in Rules 164 and 433 under the Act.

(v) Testing-the-Waters Materials. The Company (i) has not alone engaged in any Testing-the-Waters Communications (as defined below), other than Testing-the-Waters Communications with the prior consent of the Representative with entities that are qualified institutional buyers within the meaning of Rule 144A under the Act or institutions that are accredited investors within the meaning of Rule 501 under the Act and (ii) has not authorized anyone other than the Representative to engage in Testing-the-Waters Communications. The Company reconfirms that the Representative has been authorized to act on its behalf in undertaking Testing-the-Waters Communications. The Company has not distributed any Written Testing-the-Waters Communications (as defined below) other than those listed on Schedule V hereto. **“Written Testing-the-Waters Communication”** means any Testing-the-Waters Communication that is a written communication within the meaning of Rule 405 under the Act. Any individual Written Testing-the-Waters Communication does not conflict with the information contained in the Registration Statement or the Time of Sale Disclosure Package, complied in all material respects with the Act, and when taken together with the Time of Sale Disclosure Package as of the Time of Sale, did not contain any 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. **“Testing-the-Waters Communication”** means any oral or written communication with potential investors undertaken in reliance on Section 5(d) of the Act.

(vi) *No Other Offering Materials.* The Company has not distributed and will not distribute any prospectus or other offering material in connection with the offering and sale of the Securities other than any Preliminary Prospectus, the Time of Sale Disclosure Package or the Prospectus or other materials permitted by the Act to be distributed by the Company; *provided, however,* that, except as set forth on Schedule III, the Company has not made and will not make any offer relating to the Securities that would constitute a free writing prospectus, except in accordance with the provisions of Section 4(a)(xiii) of this Agreement and, except as set forth on Schedule V, the Company has not made and will not make any communication relating to the Securities that would constitute a Testing-the-Waters Communication, except in accordance with the provisions of Section 2(a)(v) of this Agreement.

(vii) *Conformity with Securities Act and Exchange Act.* The Registration Statement, the Time of Sale Disclosure Package, the Prospectus, any Issuer Free Writing Prospectus or any amendment or supplement thereto, and the documents incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus or any amendment or supplement thereto, when such documents were or are filed with the Commission under the Securities Act or the Exchange Act or became or become effective under the Securities Act, as the case may be, conformed or will conform in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable.

(viii) *Financial Information.* The consolidated financial statements of the Company included or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus and the Issuer Free Writing Prospectuses, if any, together with the related notes and schedules, present fairly, in all material respects, the consolidated financial position of the Company and the Subsidiaries (as defined below) as of the dates indicated and the consolidated results of operations, cash flows and changes in stockholders' equity of the Company for the periods specified and have been prepared in compliance with the requirements of the Securities Act and Exchange Act and in conformity with GAAP (as defined below) applied on a consistent basis during the periods involved; the other financial and statistical data with respect to the Company and the Subsidiaries (as defined below) contained or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus and the Issuer Free Writing Prospectuses, if any, are accurately and fairly presented and prepared on a basis consistent with the financial statements and books and records of the Company; there are no financial statements (historical or pro forma) that are required to be included or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus that are not included or incorporated by reference as required; the Company and the Subsidiaries (as defined below) do not have any material liabilities or obligations, direct or contingent (including any off-balance sheet obligations), not described in the Registration Statement (excluding the exhibits thereto), the Time of Sale Disclosure Package, and the Prospectus; and all disclosures contained or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus and the Issuer Free Writing Prospectuses, if any, regarding "non-GAAP financial measures" (as such term is defined

by the rules and regulations of the Commission) comply with Regulation G of the Exchange Act and Item 10 of Regulation S-K under the Securities Act, to the extent applicable.

(ix) *Organization*. The Company and each of its Subsidiaries are duly organized, validly existing and in good standing as a corporation or other business entity under the laws of their respective jurisdictions of organization. The Company and each of its Subsidiaries are duly licensed or qualified as a foreign corporation or other entity for transaction of business and in good standing under the laws of each other jurisdiction in which their respective ownership or lease of property or the conduct of their respective businesses requires such license or qualification, and have all corporate power and authority necessary to own or hold their respective properties and to conduct their respective businesses as described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus, except where the failure to be so qualified or in good standing or have such power or authority would not, individually or in the aggregate, (i) have a material adverse effect on, or reasonably be expected to have a material adverse effect on the assets, business, operations, earnings, properties, condition (financial or otherwise), prospects, stockholders' equity or results of operations of the Company and the Subsidiaries taken as a whole, or (ii) prevent or materially interfere with consummation of the transactions contemplated hereby (a "*Material Adverse Effect*").

(x) *Subsidiaries*. The subsidiaries set forth on Schedule 4 (collectively, the "*Subsidiaries*"), are the Company's only significant subsidiaries (as such term is defined in Rule 1-02 of Regulation S-X promulgated by the Commission). Except as set forth in the Registration Statement, the Time of Sale Disclosure Package, and in the Prospectus, the Company owns, directly or indirectly, all of the equity interests of the Subsidiaries free and clear of any lien, charge, security interest, encumbrance, right of first refusal or other restriction, and all the equity interests of the Subsidiaries are validly issued and are fully paid, nonassessable and free of preemptive and similar rights. No Subsidiary is currently prohibited, directly or indirectly, from paying any dividends to the Company, from making any other distribution on such Subsidiary's capital stock, from repaying to the Company any loans or advances to such Subsidiary from the Company or from transferring any of such Subsidiary's property or assets to the Company or any other Subsidiary of the Company.

(xi) *No Violation or Default*. Neither the Company nor any of its Subsidiaries is (i) in violation of its charter or by-laws or similar organizational documents; (ii) in default, and no event has occurred that, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound or to which any of the property or assets of the Company or any of its Subsidiaries are subject; or (iii) in violation of any law or statute or any judgment, order, rule or regulation of any Governmental Authority (as defined below), except, in the case of each of clauses (ii) and

(iii) above, for any such violation or default that would not, individually or in the aggregate, have a Material Adverse Effect. To the Company's knowledge, no other party under any material contract or other agreement to which it or any of its Subsidiaries is a party is in default in any respect thereunder where such default would have a Material Adverse Effect.

(xii) No Material Adverse Change. Subsequent to the respective dates as of which information is given in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus and the Free Writing Prospectuses, if any (including any document deemed incorporated by reference therein), there has not been (i) any Material Adverse Effect or the occurrence of any development that the Company reasonably expects will result in a Material Adverse Effect, (ii) any transaction which is material to the Company and the Subsidiaries taken as a whole, (iii) any obligation or liability, direct or contingent (including any off-balance sheet obligations), incurred by the Company or any Subsidiary, which is material to the Company and the Subsidiaries taken as a whole, (iv) any material change in the capital stock or outstanding long-term indebtedness of the Company or any of its Subsidiaries or (v) any dividend or distribution of any kind declared, paid or made on the capital stock of the Company or any Subsidiary, other than in each case above in the ordinary course of business or as otherwise disclosed in the Registration Statement, the Time of Sale Disclosure Package, or Prospectus (including any document deemed incorporated by reference therein).

(xiii) Capitalization. The issued and outstanding shares of capital stock of the Company have been validly issued, are fully paid and nonassessable and, other than as disclosed in the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, are not subject to any preemptive rights, rights of first refusal or similar rights. The Company has an authorized, issued and outstanding capitalization as set forth in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus as of the dates referred to therein (other than the grant of additional options under the Company's existing stock option plans, or changes in the number of outstanding shares of Common Stock of the Company due to the issuance of shares upon the exercise or conversion of securities exercisable for, or convertible into, Common Stock outstanding on the date hereof) and such authorized capital stock conforms to the description thereof set forth in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus. The description of the securities of the Company in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus is complete and accurate in all material respects, as of the date referred to therein. Except as disclosed in or contemplated by the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, as of the date referred to therein, the Company does not have outstanding any options to purchase, or any rights or warrants to subscribe for, or any securities or obligations convertible into, or exchangeable for, or any contracts or commitments to issue or sell, any shares of capital stock or other securities.

(xiv) Authorization; Enforceability. The Company has full legal right, power and authority to enter into this Agreement and perform the transactions contemplated hereby. This Agreement has been duly authorized, executed and delivered

by the Company and is a legal, valid and binding agreement of the Company enforceable in accordance with its terms, except to the extent that enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally and by general equitable principles.

(xv) Authorization of the Securities. The Securities, when issued and delivered pursuant to the terms approved by the board of directors of the Company or a duly authorized committee thereof, or a duly authorized executive committee, against payment therefor as provided herein, will be duly and validly authorized and issued and fully paid and nonassessable, free and clear of any pledge, lien, encumbrance, security interest or other claim, including any statutory or contractual preemptive rights, resale rights, rights of first refusal or other similar rights, and will be registered pursuant to Section 12 of the Exchange Act. The Securities, when issued, will conform to the description thereof set forth in or incorporated into Registration Statement, the Time of Sale Disclosure Package and the Prospectus.

(xvi) No Consents Required. No consent, approval, authorization, order, registration or qualification of or with any Governmental Authority is required for the execution, delivery and performance by the Company of this Agreement, the issuance and sale by the Company of the Securities, except for such consents, approvals, authorizations, orders and registrations or qualifications as may be required under applicable state securities laws or by the by-laws and rules of the Financial Industry Regulatory Authority ("**FINRA**") or the Exchange in connection with the sale of the Securities.

(xvii) No Preferential Rights. Except as set forth in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, (i) no person, as such term is defined in Rule 1-02 of Regulation S-X promulgated under the Securities Act (each, a "**Person**"), has the right, contractual or otherwise, to cause the Company to issue or sell to such Person any Common Stock or shares of any other capital stock or other securities of the Company, (ii) no Person has any preemptive rights, resale rights, rights of first refusal, rights of co-sale, or any other rights (whether pursuant to a "poison pill" provision or otherwise) to purchase any Common Stock or shares of any other capital stock or other securities of the Company, (iii) no Person has the right to act as an underwriter or as a financial advisor to the Company in connection with the offer and sale of the Common Stock, and (iv) no Person has the right, contractual or otherwise, to require the Company to register under the Securities Act any Common Stock or shares of any other capital stock or other securities of the Company, or to include any such shares or other securities in the Registration Statement or the offering contemplated thereby, whether as a result of the filing or effectiveness of the Registration Statement or the sale of the Securities as contemplated thereby or otherwise.

(xviii) Independent Public Accounting Firm. Brightman, Almagor Zohar & Co. (the "**Former Accountant**"), whose report on the consolidated financial statements of the Company is filed with the Commission as part of the Company's most recent Annual Report on Form 10-K filed with the Commission and incorporated by reference

into the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, during the periods covered by their report, was an independent registered public accounting firm within the meaning of the Securities Act and the Public Company Accounting Oversight Board (United States). To the Company's knowledge, the Former Accountant is not in violation of the auditor independence requirements of the Sarbanes-Oxley Act of 2002 (the "*Sarbanes-Oxley Act*") with respect to the Company. Ernst & Young LLP (the "*Company Accountant*"), the Company's independent registered public accounting firm since May 10, 2017, is an independent registered public accounting firm within the meaning of the Securities Act and the Public Company Accounting Oversight Board (United States). To the Company's knowledge, the Company Accountant is not in violation of the auditor independence requirements of the Sarbanes-Oxley Act with respect to the Company.

(xix) *No Litigation*. Except as set forth in the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, there are no actions, suits or proceedings by or before any Governmental Authority pending, nor, to the Company's knowledge, any audits or investigations by or before any Governmental Authority, to which the Company or a Subsidiary is a party or to which any property of the Company or any of its Subsidiaries is the subject that, individually or in the aggregate, would have a Material Adverse Effect and, to the Company's knowledge, no such actions, suits, proceedings, audits or investigations are threatened or contemplated by any Governmental Authority or threatened by others; and (i) there are no current or pending audits, investigations, actions, suits or proceedings by or before any Governmental Authority that are required under the Securities Act to be described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus that are not so described; and (ii) there are no contracts or other documents that are required under the Securities Act to be filed as exhibits to the Registration Statement that are not so filed.

(xx) *Consents and Permits*. Except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, the Company and its Subsidiaries have made all material filings, applications and submissions required by, possesses and is operating in material compliance with, all approvals, licenses, certificates, certifications, clearances, consents, grants, exemptions, marks, notifications, orders, permits and other authorizations issued by, the appropriate federal, state or foreign Governmental Authority (including, without limitation, the United States Food and Drug Administration (the "*FDA*"), the United States Drug Enforcement Administration or any other foreign, federal, state, provincial, court or local government or regulatory authorities including self-regulatory organizations engaged in the regulation of clinical trials, pharmaceuticals, biologics or biohazardous substances or materials) necessary for the ownership or lease of their respective properties or to conduct its businesses as described in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus (collectively, "*Permits*"), except for such Permits the failure of which to possess, obtain or make the same would not have a Material Adverse Effect; the Company and its Subsidiaries are in material compliance with the terms and conditions of all such Permits, except where the failure to be in compliance would not have a Material Adverse Effect; all of the Permits are valid and in full force and effect,

except where any invalidity, individually or in the aggregate, would not be reasonably expected to have a Material Adverse Effect; and neither the Company nor any of its Subsidiaries has received any written notice relating to the limitation, revocation, cancellation, suspension, modification or non-renewal of any such Permit which, singly or in the aggregate, if the subject of an unfavorable decision, ruling or finding, would have a Material Adverse Effect, or has any reason to believe that any such license, certificate, permit or authorization will not be renewed in the ordinary course. To the extent required by applicable laws and regulations of the FDA, the Company or the applicable Subsidiary has submitted to the FDA an Investigational New Drug Application or amendment or supplement thereto for each clinical trial it has conducted or sponsored or is conducting or sponsoring; all such submissions were in material compliance with applicable laws and rules and regulations when submitted and no material deficiencies have been asserted by the FDA with respect to any such submissions.

(xxi) Regulatory Filings. Except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, neither the Company nor any of its Subsidiaries has failed to file with the applicable Governmental Authorities (including, without limitation, the FDA, or any foreign, federal, state, provincial or local Governmental Authority performing functions similar to those performed by the FDA) any required filing, declaration, listing, registration, report or submission, except for such failures that, individually or in the aggregate, would not have a Material Adverse Effect; except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, all such filings, declarations, listings, registrations, reports or submissions were in compliance with applicable laws when filed and no deficiencies have been asserted by any applicable regulatory authority with respect to any such filings, declarations, listings, registrations, reports or submissions, except for any deficiencies that, individually or in the aggregate, would not have a Material Adverse Effect. The Company has operated and currently is, in all material respects, in compliance with the United States Federal Food, Drug, and Cosmetic Act (“*FDCA*”), all applicable rules and regulations of the FDA and other federal, state, local and foreign Governmental Authority exercising comparable authority. The Company has no knowledge of any studies, tests or trials not described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus the results of which reasonably call into question in any material respect the results of the studies, tests and trials described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus.

(xxii) Regulatory Matters. Except as described in the Registration Statement, the Time of Sale Prospectus and the Prospectus, and except as would not, individually or in the aggregate, result in a Material Adverse Effect: (A) the Company and any Subsidiary, and to the Company’s knowledge, their respective directors, officers, employees or agents, are and have been in compliance with applicable health care laws, including without limitation, the FDCA and the federal Anti-Kickback Statute (42 U.S.C. §1320a-7b(b)), the Civil Monetary Penalties Law (42 U.S.C. §1320a-7a), the U.S. civil False Claims Act (31 U.S.C. §3729 et seq.), 18 U.S.C. §§286 and 287, and the health care fraud criminal provisions under the U.S. Health Insurance Portability and Accountability

Act of 1996 (“HIPAA”) (42 U.S.C. §1320d et seq.), the exclusion laws (42 U.S.C. §1320a-7), HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act (42 U.S.C. §17921 et seq.), the U.S. Controlled Substances Act (21 U.S.C. §801 et seq.), the Patient Protection and Affordable Care Act of 2010 (Pub. Law 111-148), as amended by the Health Care and Education Reconciliation Act of 2010 (Pub. Law 111-152), including without limitation, Section 6002 (commonly referred to as the Physician Payments Sunshine Act), the Medicare statute (Title XVIII of the Social Security Act), the Medicaid statute (Title XIX of the Social Security Act), each as amended, and the regulations promulgated thereunder; and (B) neither the Company nor any Subsidiary nor, to the Company’s knowledge, any of their respective directors, officers, employees or agents is or has been debarred, suspended or excluded, or has been convicted of any crime or engaged in any conduct that would result in a debarment, suspension or exclusion from any federal or state government health care program.

(xxiii) *Intellectual Property*. Except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, the Company and its Subsidiaries own, possess, license or have other rights to use all foreign and domestic patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, technology, Internet domain names, know-how and other intellectual property (collectively, the “*Intellectual Property*”), necessary for the conduct of their respective businesses as now conducted and as proposed to be conducted as disclosed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, except to the extent that the failure to own, possess, license or otherwise hold adequate rights to use such Intellectual Property would not, individually or in the aggregate, have a Material Adverse Effect, and neither the Company nor any of its Subsidiaries has received any notice or is otherwise aware of (i) any infringement of or conflict with any Intellectual Property of another or (ii) any facts or circumstances which would render any Intellectual Property owned or licensed by the Company or a Company subsidiary invalid or inadequate to protect the interest of the Company or any of its Subsidiaries therein. Except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus (i) there are no rights of third parties to any such Intellectual Property owned by the Company and its Subsidiaries; (ii) to the Company’s knowledge, there is no infringement by third parties of any such Intellectual Property; (iii) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others challenging the Company’s and its Subsidiaries’ rights in or to any such Intellectual Property, and the Company is unaware of any facts which could form a reasonable basis for any such action, suit, proceeding or claim; (iv) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others challenging the validity, enforceability, or scope of any such Intellectual Property, and the Company is unaware of any facts which could form a reasonable basis for any such action, suit, proceeding or claim; (v) there is no pending or, to the Company’s knowledge, threatened action, suit, proceeding or claim by others that the Company or any of its Subsidiaries infringe, misappropriate, or otherwise violate, or would, upon the commercialization of

any product or service described in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, infringe, misappropriate, or otherwise violate any patent, trademark, copyright, trade secret or other proprietary rights of others, and the Company is unaware of any facts which could form a reasonable basis for any such action, suit, proceeding or claim; (vi) to the Company's knowledge, there is no third-party U.S. patent or published U.S. patent application which contains claims for which an Interference Proceeding (as defined in 35 U.S.C. § 135) has been commenced against any patent or patent application described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus as being owned by or licensed to the Company; and (vii) the Company and its Subsidiaries have complied with the terms of each agreement pursuant to which Intellectual Property has been licensed to the Company or such Subsidiary, and all such agreements are in full force and effect, except, in the case of any of clauses (i)-(vii) above, for any such infringement by third parties or any such pending or threatened suit, action, proceeding or claim as would not, individually or in the aggregate, result in a Material Adverse Effect.

(xxiv) *Clinical Studies*. The preclinical studies and tests and clinical trials described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus were, and, if still pending, are being conducted in all material respects in accordance with the experimental protocols, procedures and controls pursuant to, where applicable, accepted professional and scientific standards for products or product candidates comparable to those being developed by the Company; the descriptions of such studies, tests and trials, and the results thereof, contained in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus are accurate and complete in all material respects; the Company is not aware of any tests, studies or trials not described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus, the results of which reasonably call into question the results of the tests, studies and trials described in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus; and the Company has not received any written notice or correspondence from the FDA or any foreign, state or local Governmental Authority exercising comparable authority or any institutional review board or comparable authority requiring the termination, suspension, clinical hold or material modification of any tests, studies or trials.

(xxv) *Certain Market Activities*. Neither the Company, nor any of the Subsidiaries, nor any of their respective directors, officers or controlling persons has taken, directly or indirectly, any action designed, or that has constituted or might reasonably be expected to cause or result in, under the Exchange Act or otherwise, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities.

(xxvi) *Broker/Dealer Relationships*. Neither the Company nor any of the Subsidiaries (i) is required to register as a "broker" or "dealer" in accordance with the provisions of the Exchange Act or (ii) directly or indirectly through one or more intermediaries, controls or is a "person associated with a member" or "associated person of a member" (within the meaning set forth in the FINRA Manual).

(xxvii) *No Reliance*. The Company has not relied upon the Underwriters or legal counsel for the Underwriters for any legal, tax or accounting advice in connection with the offering and sale of the Securities.

(xxviii) *Taxes*. The Company and each of its Subsidiaries have filed all federal, state, local and foreign tax returns which have been required to be filed and paid all taxes shown thereon through the date hereof, to the extent that such taxes have become due and are not being contested in good faith, except where the failure to so file or pay would not have a Material Adverse Effect. Except as otherwise disclosed in or contemplated by the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, no tax deficiency has been determined adversely to the Company or any of its Subsidiaries which has had, or would have, individually or in the aggregate, a Material Adverse Effect. The Company has no knowledge of any federal, state or other governmental tax deficiency, penalty or assessment which has been or might be asserted or threatened against it which would have a Material Adverse Effect.

(xxix) *Title to Real and Personal Property*. Except as set forth in the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, the Company and its Subsidiaries have good and marketable title in fee simple to all items of real property owned by them, good and valid title to all personal property described in the Registration Statement, the Time of Sale Disclosure Package, or Prospectus as being owned by them, in each case free and clear of all liens, encumbrances and claims, except those matters that (i) do not materially interfere with the use made and proposed to be made of such property by the Company and any of its Subsidiaries or (ii) would not, individually or in the aggregate, have a Material Adverse Effect. Any real or personal property described in the Registration Statement, the Time of Sale Disclosure Package, or Prospectus as being leased by the Company and any of its Subsidiaries is held by them under valid, existing and enforceable leases, except those that (A) do not materially interfere with the use made or proposed to be made of such property by the Company or any of its Subsidiaries or (B) would not be reasonably expected, individually or in the aggregate, to have a Material Adverse Effect. Each of the properties of the Company and its Subsidiaries complies with all applicable codes, laws and regulations (including, without limitation, building and zoning codes, laws and regulations and laws relating to access to such properties), except if and to the extent disclosed in the Registration Statement, the Time of Sale Disclosure Package, or Prospectus or except for such failures to comply that would not, individually or in the aggregate, reasonably be expected to interfere in any material respect with the use made and proposed to be made of such property by the Company and its Subsidiaries or otherwise have a Material Adverse Effect. None of the Company or its subsidiaries has received from any Governmental Authorities any notice of any condemnation of, or zoning change affecting, the properties of the Company and its Subsidiaries, and the Company knows of no such condemnation or zoning change which is threatened, except for such that would not reasonably be expected to interfere in any material respect with the use made and proposed to be made of such property by the Company and its Subsidiaries or otherwise have a Material Adverse Effect, individually or in the aggregate.

(xxx) *Environmental Laws*. Except as set forth in the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, the Company and its Subsidiaries (i) are in compliance with any and all applicable federal, state, local and foreign laws, rules, regulations, decisions and orders relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants (collectively, “*Environmental Laws*”); (ii) have received and are in compliance with all permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses as described in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus; and (iii) have not received notice of any actual or potential liability for the investigation or remediation of any disposal or release of hazardous or toxic substances or wastes, pollutants or contaminants, except, in the case of any of clauses (i), (ii) or (iii) above, for any such failure to comply or failure to receive required permits, licenses, other approvals or liability as would not, individually or in the aggregate, have a Material Adverse Effect.

(xxxii) *Disclosure Controls*. The Company and each of its Subsidiaries maintain systems of internal accounting controls sufficient to provide reasonable assurance that (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 generally accepted accounting principles and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management’s general or specific authorization; (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; and (v) the interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus fairly presents the information called for in all material respects and has been prepared in accordance with the Commission’s rules and guidelines applicable thereto. As of the date of the most recent balance sheet of the Company and its Subsidiaries reviewed or audited by Ernst & Young LLP and the audit committee of the board of directors of the Company, there were no material weaknesses in the Company’s internal control over financial reporting (other than as set forth in the Registration Statement, the Time of Sale Disclosure Package and the Prospectus).

(xxxiii) *Sarbanes-Oxley*. There is and has been no failure on the part of the Company or any of the Company’s directors or officers, in their capacities as such, to comply in all material respects with any applicable provisions of the Sarbanes-Oxley Act and the rules and regulations promulgated thereunder. Each of the principal executive officer and the principal financial officer of the Company (or each former principal executive officer of the Company and each former principal financial officer of the Company as applicable) has made all certifications required by Sections 302 and 906 of the Sarbanes-Oxley Act with respect to all reports, schedules, forms, statements and other documents required to be filed by it or furnished by it to the Commission. For purposes of the preceding sentence, “principal executive officer” and “principal financial officer” shall have the meanings given to such terms in the Sarbanes-Oxley Act.

(xxxiii) Finder's Fees. Neither the Company nor any of the Subsidiaries has incurred any liability for any finder's fees, brokerage commissions or similar payments in connection with the transactions herein contemplated, except as may otherwise exist with respect to Underwriters pursuant to this Agreement.

(xxxiv) Labor Disputes. No labor disturbance by or dispute with employees of the Company or any of its Subsidiaries exists or, to the knowledge of the Company, is threatened which would result in a Material Adverse Effect.

(xxxv) Investment Company Act. Neither the Company nor any of the Subsidiaries is or, after giving effect to the offering and sale of the Securities, will be an "investment company" or an entity "controlled" by an "investment company," as such terms are defined in the Investment Company Act of 1940, as amended (the "**Investment Company Act**").

(xxxvi) Operations. 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, the money laundering statutes of all jurisdictions to which the Company or its Subsidiaries are subject, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any Governmental Authority (collectively, the "**Money Laundering Laws**"); and no action, suit or proceeding by or before any Governmental Authority involving the Company or any of its Subsidiaries with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

(xxxvii) Underwriter Agreements. The Company is not a party to any agreement with an agent or underwriter for any other "at the market" or continuous equity transaction.

(xxxviii) ERISA. To the knowledge of the Company, each material employee benefit plan, within the meaning of Section 3(3) of the Employee Retirement Income Security Act of 1974, as amended ("**ERISA**"), that is maintained, administered or contributed to by the Company or any of its affiliates for employees or former employees of the Company and any of its Subsidiaries has been maintained in material compliance with its terms and the requirements of any applicable statutes, orders, rules and regulations, including but not limited to ERISA and the Internal Revenue Code of 1986, as amended (the "**Code**"); no prohibited transaction, within the meaning of Section 406 of ERISA or Section 4975 of the Code, has occurred which would result in a material liability to the Company with respect to any such plan excluding transactions effected pursuant to a statutory or administrative exemption; and for each such plan that is subject to the funding rules of Section 412 of the Code or Section 302 of ERISA, no "accumulated funding deficiency" as defined in Section 412 of the Code has been incurred, whether or not waived, and the fair market value of the assets of each such plan (excluding for these purposes accrued but unpaid contributions) exceeds the present value of all benefits accrued under such plan determined using reasonable actuarial assumptions.

(xxxix) *Margin Rules.* Neither the issuance, sale and delivery of the Securities nor the application of the proceeds thereof by the Company as described in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus will violate Regulation T, U or X of the Board of Governors of the Federal Reserve System or any other regulation of such Board of Governors.

(xl) *Insurance.* The Company and each of its Subsidiaries carry, or are covered by, insurance in such amounts and covering such risks as the Company and each of its Subsidiaries reasonably believe are adequate for the conduct of their properties and as is customary for companies engaged in similar businesses in similar industries.

(xli) *Status Under the Securities Act.* The Company was not and is not an ineligible issuer as defined in Rule 405 under the Securities Act at the times specified in Rules 164 and 433 under the Securities Act in connection with the offering of the Securities.

(xlii) *No Misstatement or Omission in an Issuer Free Writing Prospectus.* Each Issuer Free Writing Prospectus, as of its issue date and as of the Time of Sale, did not, does not and will not (through the completion of the Placement for which such Issuer Free Writing Prospectus is used) include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, the Time of Sale Disclosure Package, or the Prospectus, including any incorporated document deemed to be a part thereof that has not been superseded or modified. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus based upon and in conformity with written information furnished to the Company by the Underwriters specifically for use therein.

(xliii) *No Conflicts.* Neither the execution of this Agreement, nor the issuance, offering or sale of the Securities, nor the consummation of any of the transactions contemplated herein and therein, nor the compliance by the Company with the terms and provisions hereof and thereof will conflict with, or will result in a breach of, any of the terms and provisions of, or has constituted or will constitute a default under, or has resulted in or will result in the creation or imposition of any lien, charge or encumbrance upon any property or assets of the Company pursuant to the terms of any contract or other agreement to which the Company may be bound or to which any of the property or assets of the Company is subject, except (i) such conflicts, breaches or defaults as may have been waived and (ii) such conflicts, breaches and defaults that would not have a Material Adverse Effect; nor will such action result (x) in any violation of the provisions of the organizational or governing documents of the Company, or (y) in any material violation of the provisions of any statute or any order, rule or regulation applicable to the Company or of any Governmental Authority having jurisdiction over the Company.

(xliv) Sanctions. (i) The Company represents that, neither the Company nor any of its Subsidiaries (collectively, the “**Entity**”) or any director, officer, employee, agent, affiliate or representative of the Entity, is a government, individual, or entity (in this paragraph (oo), “**Person**”) that is, or is owned or controlled by a Person that is:

(A) the subject of any sanctions administered or enforced by the U.S. Department of Treasury’s Office of Foreign Assets Control (“**OFAC**”), the United Nations Security Council, the European Union, Her Majesty’s Treasury, or other relevant sanctions authorities, including, without limitation, designation on OFAC’s Specially Designated Nationals and Blocked Persons List or OFAC’s Foreign Sanctions Evaders List (as amended, collectively, “**Sanctions**”), nor

(B) located, organized or resident in a country or territory that is the subject of Sanctions that broadly prohibit dealings with that country or territory (including, without limitation, Cuba, Iran, North Korea, Syria, and the Crimea Region of the Ukraine) (the “**Sanctioned Countries**”).

(ii) The Entity represents and covenants that it will not, directly or indirectly, use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other Person:

(A) to fund or facilitate any activities or business of or with any Person or in any country or territory that, at the time of such funding or facilitation, is the subject of Sanctions or is a Sanctioned Country; or

(B) in any other manner that will result in a violation of Sanctions by any Person (including any Person participating in the offering, whether as underwriter, advisor, investor or otherwise).

(iii) The Entity represents and covenants that, except as detailed in the Registration Statement, the Time of Sale Disclosure Package, and the Prospectus, for the past 5 years, it has not engaged in, is not now engaging in, and will not engage in, any dealings or transactions with any Person, or in any country or territory, that at the time of the dealing or transaction is or was the subject of Sanctions or is or was a Sanctioned Country.

(xlv) Stock Transfer Taxes. All stock transfer or other taxes (other than income taxes) which are required to be paid in connection with the sale and transfer of the Securities to be sold hereunder will be, or will have been, fully paid or provided for by the Company and all laws imposing such taxes will be or will have been fully complied with.

(xlvi) Compliance with Laws. Each of the Company and its Subsidiaries: (A) is and at all times has been in compliance with all statutes, rules, or regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured or distributed by the Company or its Subsidiaries (“**Applicable Laws**”), except as could not, individually or in the aggregate,

reasonably be expected to result in a Material Adverse Effect; (B) has not received any FDA Form 483, notice of adverse finding, warning letter, untitled letter or other correspondence or notice from the FDA or any other Governmental Authority alleging or asserting noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("**Authorizations**"); (C) possesses all material Authorizations and such Authorizations are valid and in full force and effect and are not in material violation of any term of any such Authorizations; (D) has not received notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any Governmental Authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations and has no knowledge that any such Governmental Authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding; (E) has not received notice that any Governmental Authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations and has no knowledge that any such Governmental Authority is considering such action; (F) has filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and correct on the date filed (or were corrected or supplemented by a subsequent submission); and (G) has not, either voluntarily or involuntarily, initiated, conducted, or issued or caused to be initiated, conducted or issued, any recall, market withdrawal or replacement, safety alert, post sale warning, "dear healthcare provider" letter, or other notice or action relating to the alleged lack of safety or efficacy of any product or any alleged product defect or violation and, to the Company's knowledge, no third party has initiated, conducted or intends to initiate any such notice or action.

(xlvii) *Statistical and Market-Related Data*. The statistical, demographic and market-related data included in the Registration Statement, the Time of Sale Disclosure Package, and Prospectus are based on or derived from sources that the Company believes to be reliable and accurate or represent the Company's good faith estimates that are made on the basis of data derived from such sources.

(xlviii) *Emerging Growth Company Status*. From the time of the initial filing of the Company's first registration statement with the Commission through the date hereof, the Company has been and is an "emerging growth company," as defined in Section 2(a) of the Securities Act (an "**Emerging Growth Company**").

(xlix) *FCPA/Anti-Corruption Compliance*. Neither the Company nor any of its Subsidiaries, nor any director, officer, agent, employee or other person associated with or acting on behalf of the Company or any of its Subsidiaries, has (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expense relating to political activity; (ii) made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds; (iii) violated or is in violation of any provision of the U.S. Foreign Corrupt Practices Act of

1977, as amended, Section 291A of the Israel Penal Law, 5733-1973 and the rules and regulations thereunder and any other applicable anti-corruption law or regulation (the “**Anti-Corruption Laws**”); or (iv) made any bribe, rebate, payoff, influence payment, kickback or other unlawful payment. The Company has instituted and maintains policies and procedures designed to ensure continued compliance with the Anti-Corruption Laws.

(l) *Cybersecurity; Data Protection.* The Company and its subsidiaries’ information technology assets and equipment, computers, systems, networks, hardware, software, websites, applications, and databases (collectively, “**IT Systems**”) are adequate for, and operate and perform in all material respects as required in connection with the operation of the business of the Company and its Subsidiaries as currently conducted, free and clear of all material bugs, errors, defects, Trojan horses, time bombs, malware and other corruptants. The Company and its Subsidiaries have implemented and maintained commercially reasonable controls, policies, procedures, and safeguards to maintain and protect their material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and data (including all Personal Data and sensitive, confidential or regulated data (collectively, the “**Confidential Data**”)) used in connection with their businesses, and there have been no breaches, violations, outages or unauthorized uses of or accesses to same, except for those that have been remedied without material cost or liability or the duty to notify any other person, nor any incidents under internal review or investigations relating to the same. The Company and its Subsidiaries are presently in material compliance 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 Confidential Data and to the protection of such IT Systems and Confidential Data from unauthorized use, access, misappropriation or modification.

(li) *Forward-looking Statements.* No forward-looking statement (within the meaning of Section 27A of the Act and Section 21E of the Exchange Act) contained in the Registration Statement, the Time of Sale Disclosure Package or the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(lii) *Incorporated Documents.* The documents incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package and in the Prospectus, when they became effective or were filed with the Commission, as the case may be, conformed in all material respects to the requirements of the Securities Act or the Exchange Act, as applicable, and were filed on a timely basis with the Commission and none of such documents contained an untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; any further documents so filed and incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package or in the Prospectus, when such documents are filed with the Commission, will conform in all material respects to the requirements of the Exchange Act, and will not contain an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(b) *Effect of Certificates.* Any certificate signed by any officer of the Company and delivered to you or to counsel for the Underwriters shall be deemed a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

3. *Purchase, Sale and Delivery of Securities.*

(a) *Firm Shares.* On the basis of the representations, warranties and agreements herein contained, but subject to the terms and conditions herein set forth, the Company agrees to issue and sell the Firm Shares to the several Underwriters, and each Underwriter agrees, severally and not jointly, to purchase from the Company the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I hereto. The purchase price for each Firm Share shall be \$[●] per share. The obligation of each Underwriter to the Company shall be to purchase from the Company that number of Firm Shares (to be adjusted by the Representative to avoid fractional shares) which represents the same proportion of the number of Firm Shares to be sold by the Company pursuant to this Agreement as the number of Firm Shares set forth opposite the name of such Underwriter in Schedule I hereto represents to the total number of Firm Shares to be purchased by all Underwriters pursuant to this Agreement. In making this Agreement, each Underwriter is contracting severally and not jointly; except as provided in paragraph (d) of this Section 3 and in Section 8 hereof, the agreement of each Underwriter is to purchase only the respective number of Firm Shares specified in Schedule I.

(b) *Option Shares.* On the basis of the representations, warranties and agreements herein contained, but subject to the terms and conditions herein set forth, the Company hereby grants to the several Underwriters an option to purchase all or any portion of the Option Shares at the same purchase price as the Firm Shares. The option granted hereunder may be exercised in whole or in part at any time (but not more than once) within 30 days after the effective date of this Agreement upon notice (confirmed in writing) by the Representative to the Company setting forth the aggregate number of Option Shares as to which the several Underwriters are exercising the option and the date and time, as determined by you, when the Option Shares are to be delivered, but in no event earlier than the First Closing Date (as defined below) nor earlier than the second business day or later than the tenth business day after the date on which the option shall have been exercised. The number of Option Shares to be purchased by each Underwriter shall be the same percentage of the total number of Option Shares to be purchased by the several Underwriters as the number of Firm Shares to be purchased by such Underwriter is of the total number of Firm Shares to be purchased by the several Underwriters, as adjusted by the Representative in such manner as the Representative deems advisable to avoid fractional shares. No Option Shares shall be sold and delivered unless the Firm Shares previously have been, or simultaneously are, sold and delivered.

(c) *Payment and Delivery.*

(i) The Securities to be purchased by each Underwriter hereunder, in book-entry form in such authorized denominations and registered in such names as Piper Jaffray & Co. may request upon at least forty-eight hours' prior notice to the Company, shall

be delivered by or on behalf of the Company to Piper Jaffray & Co., through the facilities of the Depository Trust Company (“**DTC**”), for the account of such Underwriter, with any transfer taxes payable in connection with the transfer of the Securities to the Underwriters duly paid, against payment by or on behalf of such Underwriter of the purchase price therefor by wire transfer of Federal (same-day) funds to the account specified by the Company to Piper Jaffray & Co. at least forty-eight hours in advance. The time and date of such delivery and payment shall be, with respect to the Firm Shares, 9:30 a.m., New York City time, on [●], 2018 or such other time and date as Piper Jaffray & Co. and the Company may agree upon in writing, and, with respect to the Optional Shares, 9:30 a.m., New York City time, on the date specified by Piper Jaffray & Co. in each written notice given by Piper Jaffray & Co. of the Underwriters’ election to purchase such Optional Shares, or such other time and date as Piper Jaffray & Co. and the Company may agree upon in writing. Such time and date for delivery of the Firm Shares is herein called the “**First Closing Date**”, each such time and date for delivery of the Optional Shares, if not the First Closing Date, is herein called a “**Second Closing Date**”, and each such time and date for delivery is herein called a “**Closing**”.

(ii) The documents to be delivered at each Closing by or on behalf of the parties hereto pursuant to Section 5 hereof, including the cross receipt for the Securities and any additional documents requested by the Underwriters pursuant to Section 5(l) hereof, will be delivered at the offices of Cooley LLP, 4401 Eastgate Mall, San Diego, CA 92121 (the “**Closing Location**”), and the Securities will be delivered to Piper Jaffray & Co., through the facilities of the DTC, for the account of such Underwriter, all at such Closing. A meeting will be held at the Closing Location at [●] [a.m./p.m.], New York City time, on the New York Business Day next preceding such Closing, at which meeting the final drafts of the documents to be delivered pursuant to the preceding sentence will be available for review by the parties hereto. For the purposes of this Section 3, “**New York Business Day**” shall mean each Monday, Tuesday, Wednesday, Thursday and Friday which is not a day on which banking institutions in New York City are generally authorized or obligated by law or executive order to close.

(d) Purchase by Representative on Behalf of Underwriters. It is understood that you, individually and not as Representative of the several Underwriters, may (but shall not be obligated to) make payment to the Company, on behalf of any Underwriter for the Securities to be purchased by such Underwriter. Any such payment by you shall not relieve any such Underwriter of any of its obligations hereunder. Nothing herein contained shall constitute any of the Underwriters an unincorporated association or partner with the Company.

4. **Covenants.**

(a) Covenants of the Company. The Company covenants and agrees with the several Underwriters as follows:

(i) Required Filings. The Company will prepare and file a Prospectus with the Commission containing the Rule 430A Information omitted from the Preliminary Prospectus within the time period required by, and otherwise in accordance with the provisions of, Rules 424(b) and 430A of the Rules and Regulations. If the Company has

elected to rely upon Rule 462(b) of the Rules and Regulations to increase the size of the offering registered under the Act and the Rule 462(b) Registration Statement has not yet been filed and become effective, the Company will prepare and file the Rule 462 Registration Statement with the Commission within the time period required by, and otherwise in accordance with the provisions of, Rule 462(b) and the Act. The Company will prepare and file with the Commission, promptly upon your request, any amendments or supplements to the Registration Statement or Prospectus that, in your opinion, may be necessary or advisable in connection with the distribution of the Securities by the Underwriters; and the Company will furnish the Representative and counsel for the Underwriters a copy of any proposed amendment or supplement to the Registration Statement or Prospectus and will not file any amendment or supplement to the Registration Statement or Prospectus to which you shall reasonably object by notice to the Company after having been furnished a copy a reasonable time prior to the filing.

(ii) Notification of Certain Commission Actions. The Company will advise you, promptly after it shall receive notice or obtain knowledge thereof, of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement, or any post-effective amendment thereto or preventing or suspending the use of any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus or any issuer free writing prospectus, of the suspension of the qualification of the Securities for offering or sale in any jurisdiction, or of the initiation or threatening of any proceeding for any such purpose; and the Company will promptly use its reasonable best efforts to prevent the issuance of any stop order or to obtain its withdrawal if such a stop order should be issued.

(iii) Continued Compliance with Securities Laws.

(A) Within the time during which a prospectus (assuming the absence of Rule 172) relating to the Securities is required to be delivered under the Act by any Underwriter or dealer, the Company will comply with all requirements imposed upon it by the Act, as now and hereafter amended, and by the Rules and Regulations, as from time to time in force, so far as necessary to permit the continuance of sales of or dealings in the Securities as contemplated by the provisions hereof, the Time of Sale Disclosure Package and the Prospectus. If during such period any event occurs as a result of which the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package) would include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances then existing, not misleading, or if during such period it is necessary to amend the Registration Statement or supplement the Prospectus (or if the Prospectus is not yet available to prospective investors, the Time of Sale Disclosure Package) to comply with the Act, the Company promptly will (x) notify you of such untrue statement or omission, (y) amend the Registration Statement or supplement the Prospectus (or, if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package) (at the expense of the Company) so as to correct such statement or omission or effect such compliance; *provided, however,*

that the Company may delay any such amendment or supplement if, in the reasonable judgment of the Company, it is in the best interests of the Company to do so, and (z) notify you when any amendment to the Registration Statement is filed or becomes effective or when any supplement to the Prospectus (or, if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package) is filed.

(B) If at any time following issuance of an issuer free writing prospectus or Written Testing-the-Waters Communication there occurred or occurs an event or development as a result of which such issuer free writing prospectus or Written Testing-the-Waters Communication conflicted or would conflict with the information contained in the Registration Statement, any Preliminary Prospectus or the Prospectus relating to the Securities or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at that subsequent time, not misleading, the Company (x) has promptly notified or promptly will notify the Representative of such conflict, untrue statement or omission, (y) has promptly amended or will promptly amend or supplement, at its own expense, such issuer free writing prospectus or Written Testing-the-Waters Communication to eliminate or correct such conflict, untrue statement or omission and (z) has notified or promptly will notify you when such amendment or supplement was or is filed with the Commission to the extent required to be filed by the Rules and Regulations.

(iv) Blue Sky Qualifications. The Company shall take or cause to be taken all necessary action to qualify the Securities for sale under the securities laws of such domestic United States or foreign jurisdictions as you reasonably designate and to continue such qualifications in effect so long as required for the distribution of the Securities, except that the Company shall not be required in connection therewith to qualify as a foreign corporation or to execute a general consent to service of process in any state.

(v) Provision of Documents. The Company will furnish upon request, at its own expense, to the Underwriters and counsel for the Underwriters copies of the Registration Statement (three of which will be signed and will include all consents and exhibits filed therewith), and to the Underwriters and any dealer each Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, any issuer free writing prospectus and all amendments and supplements to such documents, in each case as soon as available and in such quantities as you may from time to time reasonably request.

(vi) Rule 158. The Company will make generally available to its security holders as soon as practicable, but in no event later than 15 months after the end of the Company's current fiscal quarter, an earnings statement (which need not be audited) covering a 12-month period beginning after the effective date of the Registration Statement (which, for purposes of this paragraph, will be deemed to be the effective date of the Rule 462(b) Registration Statement, if applicable) that shall satisfy the provisions of Section 11(a) of the Act and Rule 158 of the Rules and Regulations.

(vii) *Payment and Reimbursement of Expenses.* The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, will pay or cause to be paid (A) all expenses (including transfer taxes allocated to the respective transferees) incurred in connection with the delivery to the Underwriters of the Securities, (B) all expenses and fees (including, without limitation, fees and expenses of the Company's accountants and counsel but, except as otherwise provided below, not including fees of the Underwriters' counsel) in connection with the preparation, printing, filing, delivery, and shipping of the Registration Statement (including the financial statements therein and all amendments, schedules, and exhibits thereto), the Securities, each Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, any issuer free writing prospectus and any amendment thereof or supplement thereto, and the printing, delivery, and shipping of this Agreement and other underwriting documents, including Blue Sky Memoranda (covering the states and other applicable jurisdictions) (*provided, however*, that such fees and expenses related to Blue Sky Memoranda and qualification of the Securities under the blue sky laws of the states (as described in Section 4(a)(vii)(C) below) and the review and approval by FINRA of the terms of the sale of the Securities (as described in Section 4(a)(vii)(E) below) shall not exceed \$30,000 in the aggregate), (C) all filing fees and fees and disbursements of the Underwriters' counsel incurred in connection with the qualification of the Securities for offering and sale by the Underwriters or by dealers under the securities or blue sky laws of the states and other jurisdictions which you shall designate, subject to the limits set forth above, (D) the fees and expenses of the Custodian and any transfer agent or registrar, (E) the filing fees and fees and disbursements of Underwriters' counsel incident to any required review and approval by FINRA of the terms of the sale of the Securities, subject to the limits set forth above, (F) listing fees, if any, (G) the cost and expenses of the Company relating to investor presentations or any "road show" undertaken in connection with marketing of the Securities, including, without limitation, expenses associated with the preparation or dissemination of any electronic road show, expenses associated with the production of road show slides and graphics, fees and expenses of any consultants engaged in connection with the road show presentations with the prior approval of the Company, travel and lodging expenses of the representatives and officers of the Company and any such consultants, and (H) all other costs and expenses of the Company incident to the performance of its obligations hereunder that are not otherwise specifically provided for herein. If this Agreement is terminated by the Representative pursuant to Section 9 hereof or if the sale of the Securities provided for herein is not consummated by reason of any failure, refusal or inability on the part of the Company to perform any agreement on its part to be performed, or because any other condition of the Underwriters' obligations hereunder required to be fulfilled by the Company is not fulfilled, the Company will reimburse the several Underwriters for all out-of-pocket accountable disbursements (including but not limited to fees and disbursements of counsel, printing expenses, travel expenses, postage, facsimile and telephone charges) incurred by the Underwriters in connection with their investigation, preparing to market and marketing the Securities or in contemplation of performing their obligations hereunder.

(viii) *Use of Proceeds*. The Company will apply the net proceeds from the sale of the Securities to be sold by it hereunder for the purposes set forth in the Time of Sale Disclosure Package and in the Prospectus and will file such reports with the Commission with respect to the sale of the Securities and the application of the proceeds therefrom as may be required in accordance with Rule 463 of the Rules and Regulations.

(ix) *Company Lock Up*. The Company will not, without the prior written consent of Piper Jaffray & Co., from the date of execution of this Agreement and continuing to and including the date 90 days after the date of the Prospectus (the "*Lock-Up Period*"), (A) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock, (B) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Common Stock, (C) confidentially submit any draft registration statement or file any registration statement with the Commission relating to the offering of any shares of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock or (D) publicly announce any intention to do any of the foregoing, provided, however, that the Company may: (X) effect the sale of the Securities contemplated hereby, (Y) issue shares of Common Stock or Related Securities in connection with any joint venture, commercial or collaborative relationship or the acquisition or license by the Company of the securities, businesses, property or other assets of another person or entity or pursuant to any employee benefit plan assumed by the Company in connection with any such acquisition; provided, however, that in the case of clause (Y), (1) that the recipients thereof provide to the Underwriter a signed Lock-Up Agreement in the form of Exhibit A hereto, and (2) the aggregate number of shares that the Company may sell or issue or agree to sell or issue shall not exceed 5.0% of the total number of shares of Common Stock issued and outstanding immediately following the completion of the transactions contemplated by this Agreement, and (Z) issue shares of Common Stock or options to purchase shares of Common Stock, or issue shares of Common Stock upon exercise of options, pursuant to any stock option, stock bonus or other stock plan or arrangement described in the Registration Statement, the Time of Sale Prospectus and the Prospectus; *provided, however*, that in the case of clause (Z), the Company shall cause each newly appointed director or executive officer that is a recipient of such securities to provide to the Underwriter a signed Lock-Up Agreement in the form of Exhibit A hereto. For purposes of the foregoing, "Related Securities" shall mean any options or warrants or other rights to acquire shares of Common Stock or any securities exchangeable or exercisable for or convertible into shares of Common Stock, or to acquire other securities or rights ultimately exchangeable or exercisable for, or convertible into, shares of Common Stock.

(x) *Stockholder Lock-Ups*. The Company has caused to be delivered to you prior to the date of this Agreement a letter, in the form of Exhibit A hereto (the "*Lock-Up Agreement*"), from each individual or entity listed on Schedule II. The Company will enforce the terms of each Lock-Up Agreement and issue stop-transfer instructions to its transfer agent and registrar for the Common Stock with respect to any transaction or contemplated transaction that would constitute a breach of or default under the applicable Lock-Up Agreement. If Piper Jaffray, in its sole discretion, agrees to release or waive the restrictions of any Lock-Up Agreement between an officer or director of the Company and Piper Jaffray and provides the Company with notice of the impending release or waiver at least three business days before the effective date of such release or waiver, the Company agrees to announce the impending release or waiver by means of a press release substantially in the form of Exhibit D hereto, issued through a major news service, at least two business days before the effective date of the release or waiver.

(xi) No Market Stabilization or Manipulation. The Company has not taken and will not take, directly or indirectly, any action designed to or which might reasonably be expected to cause or result in, or which has constituted, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Securities, and has not effected any sales of Common Stock which are required to be disclosed in response to Item 701 of Regulation S-K under the Act which have not been so disclosed in the Registration Statement.

(xii) SEC Reports. Until the satisfaction of the condition set forth in Section 4(a)(vi), the Company will file on a timely basis with the Commission such periodic and special reports as required by the Rules and Regulations.

(xiii) Free Writing Prospectuses. The Company represents and agrees that, unless it has obtained or obtains the prior written consent of Piper Jaffray & Co., and each Underwriter severally represents and agrees that, unless it has obtained or obtains the prior written consent of the Company and Piper Jaffray & Co., it has not made and will not make any offer relating to the Securities that would constitute an issuer free writing prospectus or that would otherwise constitute a free writing prospectus required to be filed with the Commission; provided that the prior written consent of the parties hereto shall be deemed to have been given in respect of the free writing prospectuses included in Schedule III. Any such free writing prospectus consented to by the Company and Piper Jaffray & Co. is hereinafter referred to as a **“Permitted Free Writing Prospectus.”** The Company represents that it has treated or agrees that it will treat each Permitted Free Writing Prospectus as an issuer free writing prospectus, and has complied and will comply with the requirements of Rules 164 and 433 of the Rules and Regulations applicable to any Permitted Free Writing Prospectus. The Company represents that it has satisfied and agrees that it will satisfy the conditions in Rule 433 to avoid a requirement to file with the Commission any electronic road show. Each Underwriter severally represents and agrees that, (A) unless it obtains the prior written consent of the Company and Piper Jaffray & Co., it has not distributed, and will not distribute any Written Testing-the-Waters Communication other than those listed on Schedule V, and (B) any Testing-the-Waters Communication undertaken by it was with entities that are qualified institutional buyers with the meaning of Rule 144A under the Act or institutions that are accredited investors within the meaning of Rule 501 under the Act.

(xiv) Emerging Growth Company. The Company will promptly notify Piper Jaffray & Co. if the Company ceases to be an Emerging Growth Company at any time prior to the later of (A) completion of the distribution of Securities within the meaning of the Act and (B) completion of the 90-day restricted period referenced in Section 4(a)(ix) hereof.

5. **Conditions of Underwriters’ Obligations**. The obligations of the several Underwriters hereunder are subject to the accuracy, as of the date hereof and at each of the First Closing Date and the Second Closing Date (as if made at such Closing Date), of and compliance with

all representations, warranties and agreements of the Company contained herein, to the performance by the Company of its obligations hereunder and to the following additional conditions:

(a) Required Filings; Absence of Certain Commission Actions. All filings required by Rules 424, 430A and 433 of the Rules and Regulations shall have been timely made (without reliance on Rule 424(b)(8) or Rule 164(b)); the Registration Statement shall remain effective; no stop order suspending the effectiveness of the Registration Statement or any part thereof, any Rule 462(b) Registration Statement, or any amendment thereof, nor suspending or preventing the use of the Time of Sale Disclosure Package, the Prospectus or any issuer free writing prospectus shall have been issued; no proceedings for the issuance of such an order shall have been initiated or threatened; and any request of the Commission for additional information (to be included in the Registration Statement, the Time of Sale Disclosure Package, the Prospectus, any issuer free writing prospectus or otherwise) shall have been complied with to your satisfaction.

(b) Continued Compliance with Securities Laws. No Underwriter shall have advised the Company that (i) the Registration Statement or any amendment thereof or supplement thereto contains an untrue statement of a material fact which, in your opinion, is material or omits to state a material fact which, in your opinion, is required to be stated therein or necessary to make the statements therein not misleading, or (ii) the Time of Sale Disclosure Package or the Prospectus, or any amendment thereof or supplement thereto, or any issuer free writing prospectus contains an untrue statement of fact which, in your opinion, is material, or omits to state a fact which, in your opinion, is material and is required to be stated therein, or necessary to make the statements therein, in light of the circumstances under which they are made, not misleading.

(c) Absence of Certain Events. Except as contemplated in the Time of Sale Disclosure Package and in the Prospectus, subsequent to the respective dates as of which information is given in the Time of Sale Disclosure Package and the Prospectus, neither the Company nor any of its subsidiaries shall have incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions, or declared or paid any dividends or made any distribution of any kind with respect to its capital stock; and there shall not have been any change in the capital stock (other than a change in the number of outstanding shares of Common Stock due to the issuance of shares upon the exercise of outstanding options or warrants or conversion of convertible securities), or any material change in the short-term or long-term debt of the Company (other than as a result of the conversion of convertible securities), or any issuance of options, warrants, convertible securities or other rights to purchase the capital stock of the Company or any of its subsidiaries, or any Material Adverse Effect or any development involving a prospective Material Adverse Effect (whether or not arising in the ordinary course of business), or any loss by strike, fire, flood, earthquake, accident or other calamity, whether or not covered by insurance, incurred by the Company or any subsidiary, the effect of which, in any such case described above, which in your judgment, makes it impractical or inadvisable to offer or deliver the Securities on the terms and in the manner contemplated in the Time of Sale Disclosure Package and in the Prospectus.

(d) No Downgrade. On or after the Time of Sale (i) no downgrading shall have occurred in the rating accorded the Company's debt securities or preferred stock by any "nationally recognized statistical organization," as that term is defined by the Commission for purposes of Rule 436(g)(2) under the Act, and (ii) no such organization shall have publicly announced that it has under surveillance or review, with possible negative implications, its rating of any of the Company's debt securities or preferred stock;

(e) Opinion of Company Counsel. On each Closing Date, there shall have been furnished to you, as Representative of the several Underwriters, the opinion of Gibson, Dunn & Crutcher LLP, counsel for the Company, dated such Closing Date and addressed to you in a form as you may reasonably request.

(g) Opinion of Intellectual Property Counsel. On each Closing Date, there shall have been furnished to you, as Representative of the several Underwriters, the opinion of Dennemeyer & Associates, LLC, intellectual property counsel for the Company, dated such Closing Date and addressed to you in a form as you may reasonably request.

(h) Opinion of Underwriters' Counsel. On each Closing Date, there shall have been furnished to you, as Representative of the several Underwriters, such opinion or opinions from Cooley LLP, counsel for the several Underwriters, dated such Closing Date and addressed to you, with respect to the formation of the Company, the validity of the Securities, the Registration Statement, the Time of Sale Disclosure Package or the Prospectus and other related matters as you reasonably may request, and such counsel shall have received such papers and information as they request to enable them to pass upon such matters.

(i) Comfort Letters. On the date hereof, on the effective date of any post-effective amendment to the Registration Statement filed after the date hereof and on each Closing Date you, as Representative of the several Underwriters, shall have received a letters of Ernst & Young LLP and Brightman, Almagor Zohar & Co., dated such date and addressed to you, in form and substance satisfactory to you.

(j) Officers' Certificate. On each Closing Date, there shall have been furnished to you, as Representative of the Underwriters, a certificate, dated such Closing Date and addressed to you, signed by the Chief Executive Officer and by the Senior Vice President Finance & Administration of the Company, to the effect that:

(i) The representations and warranties of the Company in this Agreement are true and correct as if made at 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 or other order suspending the effectiveness of the Registration Statement or any part thereof or any amendment thereof or the qualification of the Securities for offering or sale, nor suspending or preventing the use of the Time of Sale Disclosure Package, the Prospectus or any issuer free writing prospectus, has been issued, and no proceeding for that purpose has been instituted or, to the best of their knowledge, is contemplated by the Commission or any state or regulatory body; and

(iii) Affirms the accuracy of the matters set forth in section 5(c).

(k) Chief Financial Officer's Certificate. On the date hereof, on the effective date of any post-effective amendment to the Registration Statement filed after the date hereof and on each Closing Date, as the case may be, you, as Representative of the several Underwriters, shall have received a certificate of the Chief Financial Officer of the Company with respect to certain financial information, dated such date and addressed to you, in form and substance satisfactory to you.

(l) Lock-Up Agreement. The Underwriters shall have received all of the Lock-Up Agreements referenced in Section 4 and the Lock-Up Agreements shall remain in full force and effect.

(m) Other Documents. The Company shall have furnished to you and counsel for the Underwriters such additional documents, certificates and evidence as you or they may have reasonably requested.

(n) FINRA No Objections. FINRA shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements.

(o) Exchange Listing. The Securities to be delivered on such Closing Date will have been approved for listing on the Nasdaq Capital Market, subject to official notice of issuance.

All such opinions, certificates, letters and other documents will be in compliance with the provisions hereof only if they are satisfactory in form and substance to you and counsel for the Underwriters. The Company will furnish you with such conformed copies of such opinions, certificates, letters and other documents as you shall reasonably request.

6. Indemnification and Contribution.

(a) Indemnification by the Company. The Company agrees to indemnify and hold harmless each Underwriter, its affiliates, directors and officers and each person, if any, who controls such Underwriter within the meaning of Section 15 of the Act or Section 20 of the Exchange Act, from and against any losses, claims, damages or liabilities, joint or several, to which such Underwriter may become subject, under the Act or otherwise (including in settlement of any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, if such settlement is effected with the written consent of the Company), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) (i) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, including the 430A Information and any other information deemed to be a part of the Registration Statement at the time of effectiveness and at any subsequent time pursuant to the Rules and Regulations, if applicable, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, or any amendment or supplement thereto, any Issuer Free Writing Prospectus, (ii) any issuer information that the Company has filed or is required to file pursuant to Rule 433(d) of the Rules and Regulations, or any Written Testing-the-Waters Communication, or any road show as defined in Rule 433(h) under the Act (a "*road show*"), or (iii) arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading; and will reimburse each Underwriter for any legal or other expenses reasonably incurred by it in connection with investigating or defending against such loss, claim, damage, liability or action as such expenses are incurred; *provided, however*, that the Company will not be liable in any such case to the extent that any such loss, claim, damage, liability or action arises out of or is based upon an untrue statement or alleged untrue statement or omission

or alleged omission made in reliance upon and in conformity with written information furnished to the Company by you, or by any Underwriter through you, specifically for use in the preparation thereof; it being understood and agreed that the only information furnished by an Underwriter consists of the information described as such in Section 6(f).

(b) Indemnification by the Underwriters. Each Underwriter will, severally and not jointly, indemnify and hold harmless the Company, its directors, its officers who signed the Registration Statement and each person, if any, who controls the Company within the meaning of Section 15 of the Act and Section 20 of the Exchange Act, from and against any losses, claims, damages or liabilities to which the Company may become subject, under the Act or otherwise (including in settlement of any litigation, if such settlement is effected with the written consent of such Underwriter), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) (i) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus, or any amendment or supplement thereto, any issuer free writing prospectus, any issuer information that the Company has filed or is required to file pursuant to Rule 433(d) of the Rules and Regulations, or any Written Testing-the-Waters Communication, or any road show, or (ii) arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein not misleading, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was made in reliance upon and in conformity with written information furnished to the Company by you, or by such Underwriter through you, specifically for use in the preparation thereof (it being understood and agreed that the only information furnished by an Underwriter consists of the information described as such in Section 6(f)), and will reimburse the Company for any legal or other expenses reasonably incurred by the Company in connection with investigating or defending against any such loss, claim, damage, liability or action as such expenses are incurred.

(c) Notice and Procedures. Promptly after receipt by an indemnified party under subsection (a) or (b) above of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify the indemnifying party in writing of the commencement thereof; but the omission so to notify the indemnifying party shall not relieve the indemnifying party from any liability that it may have to any indemnified party except to the extent such indemnifying party has been materially prejudiced by such failure (through the forfeiture of substantive rights or defenses). In case any such action shall be brought against any indemnified party, and it shall notify the indemnifying party of the commencement thereof, the indemnifying party shall be entitled to participate in, and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel satisfactory to such indemnified party, and after notice from the indemnifying party to such indemnified party of the indemnifying party's election so to assume the defense thereof, the indemnifying party shall not be liable to such indemnified party under such subsection for any legal or other expenses subsequently incurred by such indemnified party in connection with the defense thereof other than reasonable costs of investigation; provided, however, that if, in the sole judgment of the Representative, it is advisable for the Underwriters to be represented as a group by separate counsel, the Representative shall have the right to employ a single counsel (in addition to local counsel) to represent the Representative and all Underwriters who may be subject to liability arising from any claim in respect of which indemnity may be sought by the

Underwriters under subsection (a) of this Section 6, in which event the reasonable fees and expenses of such separate counsel shall be borne by the indemnifying party or parties and reimbursed to the Underwriters as incurred. An indemnifying party shall not be obligated under any settlement agreement relating to any action under this Section 6 to which it has not agreed in writing. In addition, no indemnifying party shall, without the prior written consent of the indemnified party (which consent shall not be unreasonably withheld or delayed) effect any settlement of any pending or threatened proceeding unless such settlement includes an unconditional release of such indemnified party for all liability on claims that are the subject matter of such proceeding and does not include a statement as to, or an admission of, fault, culpability or a failure to act by or on behalf of an indemnified party. Notwithstanding the foregoing, if at any time an indemnified party shall have requested an indemnifying party to reimburse the indemnified party for fees and expenses of counsel pursuant to this Section 6(c), such indemnifying party agrees that it shall be liable for any settlement effected without its written consent if (i) such settlement is entered into more than 45 days after receipt by such indemnifying party of the aforesaid request and (ii) such indemnifying party shall not have reimbursed such indemnified party in accordance with such request prior to the date of such settlement.

(d) *Contribution; Limitations on Liability; Non-Exclusive Remedy.* If the indemnification provided for in this Section 6 is unavailable or insufficient to hold harmless an indemnified party under subsection (a) or (b) above, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of the losses, claims, damages or liabilities referred to in subsection (a) or (b) above, (i) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Securities or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions that resulted in such losses, claims, damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriters and the parties' relevant intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this subsection (d) were to be determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation which does not take account of the equitable considerations referred to in the first sentence of this subsection (d). The amount paid by an indemnified party as a result of the losses, claims, damages or liabilities referred to in the first sentence of this subsection (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending against any action or claim which is the subject of this subsection (d). Notwithstanding the provisions of this subsection (d), no Underwriter shall be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect

to the Securities purchased by it hereunder exceeds the amount of any damages that such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations in this subsection (d) to contribute are several in proportion to their respective underwriting obligations and not joint. The remedies provided for in this Section 6 are not exclusive and shall not limit any rights or remedies that might otherwise be available to any indemnified party at law or in equity.

(e) The obligations of the Company under this Section 6 shall be in addition to any liability which the Company may otherwise have and shall extend, upon the same terms and conditions, to each person, if any, who controls any Underwriter within the meaning of the Securities Act; and the obligations of the Underwriters under this Section 6 shall be in addition to any liability that the respective Underwriters may otherwise have and shall extend, upon the same terms and conditions, to each director of the Company (including any person who, with his consent, is named in the Registration Statement as about to become a director of the Company), to each officer of the Company who has signed the Registration Statement and to each person, if any, who controls the Company within the meaning of the Securities Act.

(f) Information Provided by the Underwriters. The Underwriters severally confirm and the Company acknowledges that the statements with respect to the public offering of the Securities by the Underwriters set forth [●] under the caption "Underwriting" in the Time of Sale Disclosure Package and in the Prospectus are correct and constitute the only information concerning such Underwriters furnished in writing to the Company by or on behalf of the Underwriters specifically for inclusion in the Registration Statement, any Preliminary Prospectus, the Time of Sale Disclosure Package, the Prospectus or any issuer free writing prospectus.

7. **Representations and Agreements to Survive Delivery.** All representations, warranties, and agreements of the Company herein or in certificates delivered pursuant hereto, including but not limited to the agreements of the several Underwriters and the Company contained in Section 6 hereof, shall remain operative and in full force and effect regardless of any investigation made by or on behalf of any Underwriter or any controlling person thereof, or the Company or any of its officers, directors, or controlling persons, and shall survive delivery of, and payment for, the Securities to and by the Underwriters hereunder and any termination of this Agreement.

8. **Substitution of Underwriters.**

(a) Obligation to Purchase Under Certain Circumstances. If any Underwriter or Underwriters shall fail to take up and pay for the amount of Firm Shares agreed by such Underwriter or Underwriters to be purchased hereunder, upon tender of such Firm Shares in accordance with the terms hereof, and the amount of Firm Shares not purchased does not aggregate more than 10% of the total amount of Firm Shares set forth in Schedule I hereto, the remaining Underwriters shall be obligated to take up and pay for (in proportion to their respective underwriting obligations hereunder as set forth in Schedule I hereto except as may otherwise be determined by you) the Firm Shares that the withdrawing or defaulting Underwriters agreed but failed to purchase.

(b) Termination Under Certain Circumstances. If any Underwriter or Underwriters shall fail to take up and pay for the amount of Firm Shares agreed by such Underwriter or Underwriters to be purchased hereunder, upon tender of such Firm Shares in accordance with the terms hereof, and the amount of Firm Shares not purchased aggregates more than 10% of the total amount of Firm Shares set forth in Schedule I hereto, and arrangements satisfactory to you for the purchase of such Firm Shares by other persons are not made within 36 hours thereafter, this Agreement shall terminate. In the event of any such termination neither the Company shall be under any liability to any Underwriter (except to the extent provided in Section 4(a)(vii) and Section 6 hereof) nor shall any Underwriter (other than an Underwriter who shall have failed, otherwise than for some reason permitted under this Agreement, to purchase the amount of Firm Shares agreed by such Underwriter to be purchased hereunder) be under any liability to the Company (except to the extent provided in Section 6 hereof).

(c) Postponement of Closing. If Firm Shares to which a default relates are to be purchased by the non-defaulting Underwriters or by any other party or parties, the Representative or the Company shall have the right to postpone the First Closing Date for not more than seven business days in order that the necessary changes in the Registration Statement, in the Time of Sale Disclosure Package, in the Prospectus or in any other documents, as well as any other arrangements, may be effected. As used herein, the term "Underwriter" includes any person substituted for an Underwriter under this Section 8.

(d) No Relief from Liability. No action taken pursuant to this Section shall relieve any defaulting Underwriter from liability, if any, in respect of such default.

9. Termination.

(a) Right to Terminate. You, as Representative of the several Underwriters, shall have the right to terminate this Agreement by giving notice to the Company as hereinafter specified at any time at or prior to the First Closing Date, and the option referred to in Section 3(b), if exercised, may be cancelled at any time prior to the Second Closing Date, if (i) the Company shall have failed, refused or been unable, at or prior to such Closing Date, to perform any agreement on its part to be performed hereunder, (ii) any other condition of the Underwriters' obligations hereunder is not fulfilled, (iii) trading on the Nasdaq Stock Market or New York Stock Exchange shall have been wholly suspended, (iv) minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required, on the Nasdaq Stock Market or New York Stock Exchange, by such Exchange or by order of the Commission or any other Governmental Authority, (v) a banking moratorium shall have been declared by federal or state authorities, or (vi) there shall have occurred any outbreak or escalation of hostilities or any change in financial markets or any calamity or crisis that, in your judgment, is material and adverse and makes it impractical or inadvisable to proceed with the completion of the sale of and payment for the Securities. Any such termination shall be without liability of any party to any other party except that the provisions of Section 4(a)(vii) and Section 6 hereof shall at all times be effective.

(b) Notice of Termination. If you elect to terminate this Agreement as provided in this Section, the Company shall be notified promptly by you by telephone, confirmed by letter.

10. **Default by the Company.**

(b) Default by the Company. If the Company shall fail at the First Closing Date to sell and deliver the number of Securities which it is obligated to sell hereunder, then this Agreement shall terminate without any liability on the part of any Underwriter or, except as provided in Section 4(a)(vii) and Section 6 hereof, any non-defaulting party.

(c) No Relief from Liability. No action taken pursuant to this Section shall relieve the Company from liability, if any, in respect of such default.

11. **Notices.** Except as otherwise provided herein, all communications hereunder shall be in writing and, if to the Underwriters, shall be mailed via overnight delivery service or hand delivered via courier, to the Representative c/o Piper Jaffray & Co., 800 Nicollet Mall, Minneapolis, Minnesota 55402, to the attention of Equity Capital Markets and separately, General Counsel; and (ii) if to the Company, shall be mailed or delivered to it at [●] Attention: [●], or in each case to such other address as the person to be notified may have requested in writing. Any party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose.

12. **Persons Entitled to Benefit of Agreement.** This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns and the controlling persons, officers and directors referred to in Section 6. Nothing in this Agreement is intended or shall be construed to give to any other person, firm or corporation any legal or equitable remedy or claim under or in respect of this Agreement or any provision herein contained. The term "successors and assigns" as herein used shall not include any purchaser, as such purchaser, of any of the Securities from any of the several Underwriters.

13. **Absence of Fiduciary Relationship.** The Company acknowledges and agrees that: (a) the Representative has been retained solely to act as an underwriter in connection with the sale of the Securities and that no fiduciary, advisory or agency relationship between the Company and the Representative have been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether the Representative has advised or are advising the Company on other matters; (b) the price and other terms of the Securities set forth in this Agreement were established by the Company following discussions and arms-length negotiations with the Representative and the Company is capable of evaluating and understanding and understands and accepts the terms, risks and conditions of the transactions contemplated by this Agreement; (c) it has been advised that the Representative and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Representative has no obligation to disclose such interest and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; (d) it has been advised that the Representative is acting, in respect of the transactions contemplated by this Agreement, solely for the benefit of the Representative and the other Underwriters, and not on behalf of the Company; (e) it, he or she waives to the fullest extent permitted by law, any claims it may have against the Representative for breach of fiduciary duty or alleged breach of fiduciary duty in respect of any of the transactions contemplated by this Agreement and agrees that the Representative shall have no

liability (whether direct or indirect) to the Company in respect of such a fiduciary duty claim on behalf of or in right of the Company, including stockholders, employees or creditors of the Company.

14. **Governing Law; Waiver of Jury Trial.** This Agreement shall be governed by and construed in accordance with the laws of the State of New York. The Company (on its behalf and, to the extent permitted by applicable law, on behalf of its stockholders and affiliates), and each of the Underwriters hereby irrevocably waives, 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 Agreement or the transactions contemplated hereby.

15. **Partial Unenforceability.** The invalidity or unenforceability of any section, paragraph, clause or provision of this Agreement shall not affect the validity or enforceability of any other section, paragraph, clause or provision hereof. If any section, paragraph, clause 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.

16. **Counterparts.** This Agreement may be executed in one or more counterparts and, if executed in more than one counterpart, the executed counterparts shall each be deemed to be an original and all such counterparts shall together constitute one and the same instrument.

17. **General Provisions.** 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 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. The Section headings herein are for the convenience of the parties only and shall not affect the construction or interpretation of this Agreement.

[Signature Page Follows]

Please sign and return to the Company the enclosed duplicates of this Agreement whereupon this Agreement will become a binding agreement between the Company and the several Underwriters in accordance with its terms.

Very truly yours,

NOVUS THERAPEUTICS, INC.

By _____
[•]
[•]

Confirmed as of the date first above mentioned, on behalf of themselves and the other several Underwriters named in Schedule I hereto.

PIPER JAFFRAY & CO.

By _____
Managing Director

[Signature page to Underwriting Agreement]

SCHEDULE I

| <u>Underwriter</u> | <u>Number of Firm Shares (1)</u> |
|--------------------------------|----------------------------------|
| <u>Piper Jaffray & Co.</u> | |
| <u>[●]</u> | |
| <u>Total</u> | |

-
- (1) The Underwriters may purchase up to an additional [●] Option Shares, to the extent the option described in Section 3(b) of the Agreement is exercised, in the proportions and in the manner described in the Agreement.

SCHEDULE II

List of Individuals and Entities Executing Lock-Up Agreements

Officers

Gregory J. Flesher
Catherine C. Turkel
Jon S. Kuwahara

Non-Employee Directors

Erez Chimovits
Gary A. Lyons
John S. McBride
Keith A. Katkin
Cheryl C. Cohen

Significant Stockholders

Orbimed Israel Partners Limited Partnership

SCHEDULE III

Certain Permitted Free Writing Prospectuses

[None.]

SCHEDULE IV

Pricing Information

Number of Firm Shares to be Issued: []
Public Offering Price: \$[] per share
Underwriting Discounts and Commissions: []%
Number of Option Shares: []

SCHEDULE V

Written Testing-the-Waters Communications

[None.]

EXHIBIT A

Form of Lock-Up Agreement

[•], 2018

Piper Jaffray & Co.
As representative of the underwriters named
in Schedule I to the Underwriting Agreement
referred to below

c/o Piper Jaffray & Co.
800 Nicollet Mall, Suite 800
Minneapolis, MN 55402

Dear Sirs:

As an inducement to the underwriters (the "*Underwriters*") to execute an underwriting agreement (the "*Underwriting Agreement*") providing for a public offering (the "*Offering*") of common stock (the "*Common Stock*"), of Novus Therapeutics, Inc., a Delaware corporation, and any successor (by merger or otherwise) thereto (the "*Company*"), the undersigned hereby agrees that without, in each case, the prior written consent of Piper Jaffray & Co. ("*Piper Jaffray*") during the period specified in the second succeeding paragraph (the "*Lock-Up Period*"), the undersigned will not: (1) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, any shares of Common Stock or any securities convertible into, exercisable or exchangeable for or that represent the right to receive Common Stock (including without limitation, Common Stock which may be deemed to be beneficially owned by the undersigned in accordance with the rules and regulations of the Securities and Exchange Commission and securities which may be issued upon exercise of a stock option or warrant) whether now owned or hereafter acquired (the "*Undersigned's Securities*"); (2) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the Undersigned's Securities, whether any such transaction described in clause (1) or (2) above is to be settled by delivery of Common Stock or such other securities, in cash or otherwise; (3) make any demand for or exercise any right with respect to, the registration of any Common Stock or any security convertible into or exercisable or exchangeable for Common Stock; or (4) publicly disclose the intention to do any of the foregoing.

The undersigned agrees that the foregoing restrictions preclude the undersigned from engaging in any hedging or other transaction which is designed to or which reasonably could be expected to lead to or result in a sale or disposition of the Undersigned's Securities even if such Securities would be disposed of by someone other than the undersigned. Such prohibited hedging or other transactions would include without limitation any short sale or any purchase, sale or grant of any right (including without limitation any put or call option) with respect to any of the Undersigned's Securities or with respect to any security that includes, relates to, or derives any significant part of its value from such Securities.

The Lock-Up Period will commence on the date of this Agreement and continue and include the date 90 days after the date of the final prospectus used to sell Common Stock in the Offering pursuant to the Underwriting Agreement, to which you are or expect to become parties.

Notwithstanding the foregoing, the undersigned may transfer the Undersigned's Securities (i) as a *bona fide* gift or gifts, (ii) to any trust for the direct or indirect benefit of the undersigned or the immediate family of the undersigned, (iii) if the undersigned is a corporation, partnership, limited liability company, trust or other business entity (1) transfers to another corporation, partnership, limited liability company, trust or other business entity that is a direct or indirect affiliate (as defined in Rule 405 promulgated under the Securities Act of 1933, as amended) of the undersigned or (2) distributions of shares of Common Stock or any security convertible into or exercisable for Common Stock to limited partners, limited liability company members or stockholders of the undersigned, (iv) if the undersigned is a trust, transfers to the beneficiary of such trust, (v) transfers by testate succession or intestate succession or (vi) pursuant to the Underwriting Agreement; *provided*, in the case of clauses (i)-(v), that (x) such transfer shall not involve a disposition for value, (y) the transferee agrees in writing with the Underwriters to be bound by the terms of this Lock-Up Agreement, and (z) no filing by any party under Section 16(a) of the Securities Exchange Act of 1934, as amended (the "*Exchange Act*"), or other public announcement shall be required or shall be made voluntarily in connection with such transfer during the Lock-Up Period. For purposes of this Agreement, "immediate family" shall mean any relationship by blood, marriage or adoption, nor more remote than first cousin.

In addition, the foregoing restrictions shall not apply to (i) the exercise of stock options granted pursuant to the Company's equity incentive plans; *provided* that it shall apply to any of the Undersigned's Securities issued upon such exercise, or (ii) the establishment of any contract, instruction or plan (a "*Plan*") that satisfies all of the requirements of Rule 10b5-1(c)(1)(i)(B) under the Exchange Act; *provided* that no sales of the Undersigned's Securities shall be made pursuant to such a Plan prior to the expiration of the Lock-Up Period, and such a Plan may only be established if no public announcement of the establishment or existence thereof and no filing with the Securities and Exchange Commission or other regulatory authority in respect thereof or transactions thereunder or contemplated thereby, by the undersigned, the Company or any other person, shall be required, and no such announcement or filing is made voluntarily, by the undersigned, the Company or any other person, prior to the expiration of the Lock-Up Period.

In furtherance of the foregoing, the Company and its transfer agent and registrar are hereby authorized to decline to make any transfer of shares of Common Stock if such transfer would constitute a violation or breach of this Agreement.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Agreement and that upon request, the undersigned will execute and additional documents necessary to ensure the validity or enforcement of this Agreement. All authority herein conferred or agreed to be conferred and any obligations of the undersigned shall be binding upon the successors, assigns, heirs or personal representatives of the undersigned.

The undersigned understands that the undersigned shall be released from all obligations under this Agreement if (i) the Company notifies the Underwriters that it does not intend to proceed with the Offering, (ii) the Underwriting Agreement does not become effective, or if the Underwriting Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated prior to payment for and delivery of the Common Stock to be sold thereunder, or (iii) the Offering is not completed by September 30, 2018.

The undersigned understands that the Underwriters are entering into the Underwriting Agreement and proceeding with the Offering in reliance upon this Agreement.

[Signature page follows]

This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

Very truly yours,

Name of Securityholder *(Print exact name)*

By: _____
Signature

If not signing in an individual capacity:

Name of Authorized Signatory *(Print)*

Title of Authorized Signatory *(Print)*

*(indicate capacity of person signing if signing as
custodian, trustee, or on behalf of an entity)*

[Signature page to Lockup Agreement]

GIBSON DUNN

Gibson, Dunn & Crutcher LLP

555 Mission Street
San Francisco, CA 94105-0921
Tel 415.393.8200
www.gibsondunn.com

September 4, 2018

Novus Therapeutics, Inc.
19900 MacArthur Blvd., Suite 550
Irvine, California 92612

Re: *Novus Therapeutics, Inc.*
Registration Statement on Form S-1 (File No. 333-226467)

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-1, File No. 333-226467, as amended (the "Registration Statement"), of Novus Therapeutics, Inc., a Delaware corporation (the "Company"), filed with the Securities and Exchange Commission (the "Commission") pursuant to the Securities Act of 1933, as amended (the "Securities Act"), in connection with the offering by the Company of up to 6,900,000 shares of the Company's common stock, par value \$0.001 per share, (the "Shares").

In arriving at the opinion expressed below, we have examined originals, or copies certified or otherwise identified to our satisfaction as being true and complete copies of the originals of specimen Common Stock certificates and such other documents, corporate records, certificates of officers of the Company and of public officials and other instruments as we have deemed necessary or advisable to enable us to render the opinions set forth below. In our examination, we have assumed without independent investigation the genuineness of all signatures, the legal capacity and competency of all natural persons, the authenticity of all documents submitted to us as originals and the conformity to original documents of all documents submitted to us as copies.

Based upon the foregoing, and subject to the assumptions, exceptions, qualifications and limitations set forth herein, we are of the opinion that the Shares, when issued against payment therefor as set forth in the Registration Statement, will be validly issued, fully paid and non-assessable.

We consent to the filing of this opinion as an exhibit to the Registration Statement, and we further consent to the use of our name under the caption "Legal Matters" in the Registration Statement and the prospectus that forms a part thereof. In giving these consents, we do not thereby admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the Rules and Regulations of the Commission.

Very truly yours,

/S/ GIBSON, DUNN & CRUTCHER, LLP

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption “Experts” and to the use of our report dated March 30, 2018, in Amendment No. 1 to the Registration Statement (Form S-1 No. 333-226467) and related Prospectus of Novus Therapeutics, Inc. for the registration of up to \$34,500,000 of shares of its common stock.

/s/ Ernst & Young LLP

Irvine, California
September 4, 2018

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Amendment No. 1 to Registration Statement on Form S-1 of our report dated March 30, 2018 relating to the financial statements of Novus Therapeutics Inc. (the “Company”) for the year ended December 31, 2016, which report expresses an unqualified opinion and includes an explanatory paragraph regarding the Company’s ability to continue as a going concern, appearing in the Company’s Annual Report on Form 10-K for the year ended December 31, 2017. We also consent to the reference to us under the heading “Experts” in such Registration Statement.

/s/ Brightman Almagor Zohar & Co.

Brightman Almagor Zohar & Co.
Certified Public Accountants
Member of Deloitte Touche Tohmatsu Limited

Tel Aviv, Israel
September 4, 2018