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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): June 18, 2019

ARCTURUS THERAPEUTICS HOLDINGS INC.
(Exact name of registrant as specified in its charter)

Delaware	**001-38942**	**32-0595345**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(I.R.S. Employer Identification No.)**

10628 Science Center Drive, Suite 250
San Diego, California 92121
(Address of principal executive offices)

Registrant's telephone number, including area code: (858) 900-2660

Arcturus Therapeutics Ltd.
(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, par value $0.001 per share	**ARCT**	**The NASDAQ Stock Market LLC**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☐

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

Item 1.01 Entry Into a Material Definitive Agreement.

Equity Purchase Agreement and Registration Rights Agreement

On June 18, 2019, Arcturus Therapeutics Holdings Inc. (the "Company") entered into an Equity Purchase Agreement (the "Agreement") with Ultragenyx Pharmaceutical Inc. ("Ultragenyx"). Pursuant to the terms of the Agreement, the Company sold an aggregate of 2,400,000 shares (the "Shares") of common stock, par value $0.001 per share ("Common Stock") at a price of $10.00 per share to Ultragenyx on June 19, 2019. Pursuant to the Agreement, the Company also granted Ultragenyx a two year option (the "Option") to purchase up to 600,000 additional shares of Common Stock at a price of $16.00 per share.

Pursuant to the terms of the Agreement, until the later of (i) the first anniversary of the closing date or (ii) the date on which Ultragenyx beneficially owns less than 8.0% of the total voting power of the Company, at each annual stockholders meeting or any stockholders meeting at which members of the board of directors (the "Board") are to be elected, the Company must nominate one director designated by Ultragenyx (the "Ultragenyx Designee"). Additionally, the Ultragenyx Designee is required to be appointed to all Board committees (subject to applicable Nasdaq rules). Ultragenyx also has the right to have a designee attend Board meetings as a non-voting observer.

Pursuant to the Agreement, Ultagenyx agreed to customary standstill provisions and restrictions on transfer of the Shares. The standstill provisions and transfer restrictions last until June 19, 2021, and expire earlier upon the occurrence of certain events set forth in the Equity Purchase Agreement.

The Agreement contains customary representations, warranties, and indemnification obligations of the parties.

In connection with the Agreement, the Company and Ultragenyx entered into a Registration Rights Agreement (the "Registration Rights Agreement"). The Registration Rights Agreement requires the Company to register the sale of the Shares within 180 days of June 18, 2019, and also provides Ultragenyx with certain "piggy-back" registration rights with respect to registration statements that the Company may file.

Copies of the Agreement and the Registration Rights Agreement are filed as Exhibits 10.1 and 4.1 to this Current Report on Form 8-K, respectively, and are incorporated herein by reference. The foregoing descriptions of the terms of the Agreement and the Registration Rights Agreement are qualified in their entirety by reference to such exhibits.

Collaboration Agreement

On June 18, 2019, the Company and Ultragenyx entered into a Third Amendment (the "Amendment") to the Research Collaboration and License Agreement, dated October 26, 2015, as amended on October 17, 2017 and April 20, 2018. The Amendment expands the collaboration between the Company and Ultragenyx to cover additional nucleic acid modalities including mRNA, DNA, siRNA therapeutics. The Amendment also expands the existing intellectual property license to cover manufacturing patents and know-how. The Amendment provides Ultragenyx with the right to identify a total of ten rare disease targets to be reserved for future collaborative development with the Company, which expands this program from 8 to 10 total reserved rare disease targets. The Amendment also clarifies certain obligations of the Company and Ultragenyx with respect to manufacturing cooperation and data sharing.

The Amendment also eliminated certain target exercise payments, exclusivity extension fees and optimization milestone payments that were previously required to be paid by Ultragenyx to exercise options and extend reserve target exclusivity. In connection with the Amendment, Ultragenyx will make a one-time payment to the Company of $6,000,000. Finally, the Amendment narrowed the terms under which a royalty or milestone payment that may be required to be paid by Ultragenyx could be reduced based on the Company's and third parties' intellectual property coverage over a developed product.

A copy of the Amendment is filed as Exhibit 10.2 to this Current Report on Form 8-K and is incorporated herein by reference, and the foregoing description of the terms of the Amendment is qualified in its entirety by reference to such exhibit.

Indemnification Agreement

The information set forth in the second paragraph of Item 5.02 of this Current Report on Form 8-K is hereby incorporated by reference into this Item 1.01 in its entirety.

Item 3.02 Unregistered Sales of Equity Securities.

The information set forth in Item 1.01 of this Current Report on Form 8-K is hereby incorporated by reference into this Item 3.02 in its entirety.

The issuance and sale of the Shares and the additional shares issuable upon exercise of the Option (collectively, the "Securities") have not been registered under the Securities Act. The Shares have been sold and issued in reliance on an exemption from the registration requirements of the Securities Act afforded by Section 4(a)(2) thereof and Rule 506 of Regulation D thereunder.

None of the Securities may be offered or sold in the United States absent registration under or exemption from the Securities Act and any applicable state securities laws. This Current Report on Form 8-K is not an offer to sell or the solicitation of an offer to buy any such Securities.

Item 5.02 Departure of Directors or Principal Officers; Election of Directors; Appointment of Principal Officers.
On June 13, 2019, pursuant to the terms of the Equity Purchase Agreement and effective as of June 19, 2019, the Board approved the appointment of Karah Parschauer, General Counsel and Executive Vice President of Ultragenyx, to the Company's Board. Ms. Parschauer has served as Ultragenyx's General Counsel and Executive Vice President since June 2016. In such capacity, Ms. Parschauer leads Ultragenyx's legal, compliance and government affairs functions. Prior to Ultragenyx, Ms. Parschauer most recently served as Vice President, Associate General Counsel, at Allergan plc, a pharmaceutical company, from June 2005 until June 2016. Prior to Allergan, Ms. Parschauer was an attorney at Latham & Watkins LLP. Ms. Parschauer holds a B.A from Miami University and a J.D. from Harvard Law School.

In connection with her appointment to the Board, Ms. Parschauer entered into the Company's standard indemnification agreement.

In connection with the appointment of Ms. Parschauer to the Board, Andy Sassine resigned from the Board in order to maintain a majority of independent directors in accordance with the rules of the Nasdaq Stock Market. The Company intends to commence a search for an additional independent director, after which it is expected that Mr. Sassine will be reappointed to the Board simultaneously with the appointment of a new independent director. Mr. Sassine remains in his position as Chief Financial Officer of the Company.

Item 7.01 Regulation FD Disclosure.

On June 19, 2019, the Company issued a press release regarding the transactions with Ultragenyx and Ms. Parschauer's appointment to the Board. A copy of the press release is furnished as Exhibit 99.1 to this report and is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Description
4.1	Registration Rights Agreement, dated June 18, 2019, between the Company and Ultragenyx Pharmaceutical Inc.
10.1	Equity Purchase Agreement, dated June 18, 2019, between the Company and Ultragenyx Pharmaceutical Inc.
10.2	Third Amendment, dated June 18, 2019 to Research Collaboration and License Agreement, dated October 26, 2015, as amended on October 17, 2017 and April 20, 2018, between the Company and Ultragenyx Pharmaceutical Inc.
99.1	Press Release dated June 19, 2019

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Arcturus Therapeutics Holdings Inc.

Date: June 19, 2019

By: /s/ Joseph E. Payne
Name: Joseph E. Payne
Title: Chief Executive Officer

CONFIDENTIAL

REGISTRATION RIGHTS AGREEMENT

by and between

ARCTURUS THERAPEUTICS HOLDINGS INC.

and

ULTRAGENYX PHARMACEUTICAL INC.

Dated as of June 18, 2019

REGISTRATION RIGHTS AGREEMENT

THIS REGISTRATION RIGHTS AGREEMENT (this "Agreement"), dated as of June 18, 2019, is by and between Arcturus Therapeutics Holdings Inc., a Delaware corporation (the "Company"), and Ultragenyx Pharmaceutical Inc., a Delaware corporation (the "Investor").

RECITALS

WHEREAS, pursuant to the Equity Purchase Agreement, dated as of the date hereof, by and between the Company and the Investor (as such agreement may be amended from time to time, the "Equity Purchase Agreement"), the Investor agreed to purchase from the Company, and the Company agreed to issue to the Investor, shares of Common Stock upon the terms and conditions therein;

WHEREAS, in connection with the transactions contemplated by the Equity Purchase Agreement, the Company and the Investor wish to define certain registration rights granted to the Investor on the terms and conditions set out in this Agreement.

NOW, THEREFORE, in consideration of the recitals and the mutual premises, covenants and agreements contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions. In addition to capitalized terms defined elsewhere in this Agreement, the following capitalized terms shall have the following meanings when used in this Agreement:

1.1. "Additional Shares" has the meaning ascribed to such term in the Equity Purchase Agreement.

1.2. "Filing Date" means (a) with respect to the Registration Statement required to register the resale of the Shares, the 180th calendar day following the date hereof and (b) with respect to any additional Registration Statement that may be required to register the Investor's resale of any Additional Shares the Investor may acquire pursuant to the Equity Purchase Agreement, the later of (i) the 180th calendar day following the date hereof and (ii) the 45th calendar day following the date the Investor requests the filing of an additional Registration Statement to register any Additional Shares which are not included in any then filed Registration Statement.

1.3. "Exchange Act" means the Securities Exchange Act of 1934, as amended.

1.4. "Governmental Authority" means any applicable government authority, court, tribunal, arbitrator, agency, department, legislative body, commission, regulatory or administrative authority or other instrumentality of (a) any government of any country or territory, (b) any nation, state, province, county, city or other political subdivision thereof, (c) any supranational body or (d) any self-regulatory organization.

1.5. "Holder" or "Holders" means the Investor or any transferee to whom the Investor has transferred Registrable Securities in accordance with the Equity Purchase Agreement (including in compliance with Section 6.2 of the Equity Purchase Agreement) and to whom registration rights are assigned in accordance with Section 6.5, in each case that is a holder of Registrable Securities.

1.6. "Law" or "Laws" means any federal, national, supranational, state, provincial, local or similar laws, statutes, rules, codes, regulations, writs, orders, judgments, decrees, injunctions,

awards, executive orders, rulings and/or ordinances of any Governmental Authority, including any common law.

1.7. "Proceeding" means any civil, criminal or administrative litigation, claim, action, suit, arbitration, hearing, inquiry, investigation or other similar proceeding by or before any Governmental Authority.

1.8. "Prospectus" means the prospectus included in the Registration Statement (including a prospectus that includes any information previously omitted from a prospectus filed as part of an effective registration statement in reliance upon Rule 430A promulgated by the Commission pursuant to the Securities Act), as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by the Registration Statement, and all other amendments and supplements to the Prospectus, including post-effective amendments, and all material incorporated by reference or deemed to be incorporated by reference in such Prospectus.

1.9. "Registrable Securities" means (i) all shares of Common Stock acquired pursuant to the Equity Purchase Agreement, (ii) any securities into which such Common Stock may be converted or exchanged pursuant to any merger, consolidation, sale of all or any part of its assets, corporate conversion or other extraordinary transaction of the Company and (iii) any other equity securities of the Company held by Holders or issued as (or issuable upon conversion or exercise of any warrant, right or other security which is issued as) a dividend, stock split or other distribution with respect to or in replacement of the shares of Common Stock referenced in clauses (i) – (iii). As to any Registrable Securities, such securities will cease to be Registrable Securities when: (i) a registration statement covering such Registrable Securities has been declared effective by the SEC under the Securities Act and such Registrable Securities have been disposed of pursuant to such effective registration statement; (ii) such Registrable Securities shall have been sold pursuant to Rule 144 (or any similar provision then in effect) under the Securities Act; (iii) following the date when all Additional Shares (as defined the Equity Purchase Agreement) have been purchased by the Investor or the Investor's right to purchase such Additional Shares under the Equity Purchase Agreement has terminated, such Registrable Securities may be sold pursuant to Rule 144 (or any similar provision then in effect) without limitation thereunder on volume or manner of sale and without the requirement for the Company to be in compliance with the current public information requirement under Rule 144, as determined by the counsel to the Company pursuant to a written opinion letter to such effect, addressed and acceptable to the transfer agent and the affected Holders; (iv) such Registrable Securities cease to be outstanding, or (v) such Registrable Securities have been sold in a private transaction in which the transferor's rights under this Agreement are not assigned to the transferee of the securities.

1.10. "Registration Statement" means each registration statement required to be filed hereunder pursuant to Section 2.1, including the Prospectus, amendments and supplements to any such registration statement or Prospectus, including pre- and post-effective amendments, all exhibits thereto, and all material incorporated by reference or deemed to be incorporated by reference in such registration statement.

1.11. "Rule 415" means Rule 415 promulgated by the SEC pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the SEC having substantially the same purpose and effect as such Rule.

1.12. "Rule 424" means Rule 424 promulgated by the SEC pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the SEC having substantially the same purpose and effect as such Rule.

1.13. "SEC" means the U.S. Securities and Exchange Commission.

1.14. "SEC Guidance" means (i) any publicly-available written or oral guidance of the SEC staff, or any comments, requirements or requests of the SEC staff and (ii) the Securities Act.

1.15. "Securities Act" means the Securities Act of 1933, as amended.

1.16. "Shares" has the meaning ascribed to such term in the Equity Purchase Agreement.

1.17. "Trading Day" means any day on which the Common Stock is traded on the Trading Market on which the Common Stock is then traded; provided, that "Trading Day" shall not include any day on which the Common Stock is scheduled to trade on such Trading Market for less than 4.5 hours or any day that the Common Stock is suspended from trading during the final hours of trading on such Trading Market (or, if such Trading Market does not designate in advance the closing time of trading on such Trading Market, then during the hour ending at 4:00 p.m., New York time).

1.18. "Trading Market" means any of the following markets or exchanges on which the Common Stock may be listed or quoted for trading: the NYSE MKT, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market, the New York Stock Exchange, or any successor to any of the foregoing.

2. Shelf Registration; Piggy-Back Registrations.

2.1. Shelf Registration.

(a) On or prior to each Filing Date, the Company shall prepare and file with the SEC the Registration Statement covering the resale of all of the then-outstanding Registrable Securities that are not then registered on an effective Registration Statement for an offering to be made on a continuous basis pursuant to Rule 415. Each Registration Statement filed hereunder shall be on Form S-3 (except if the Company is not then eligible to register for resale the Registrable Securities on Form S-3, in which case such registration shall be on another appropriate form in accordance herewith, subject to the provisions of Section 2.1(c)) and shall contain (except if otherwise required pursuant to written comments received from the SEC upon a review of such Registration Statement) the "Plan of Distribution" substantially in the form attached hereto as Annex A. It is agreed and understood that the Company shall, from time to time, be obligated to file one or more additional Registration Statements to cover any Registrable Securities which are not registered for resale pursuant to a pre-existing Registration Statement. The Company shall not be required to file more than two (2) Registration Statements with respect to the Additional Shares pursuant to this Section 2.1(a) in any 12-month period.

(b) Subject to the terms of this Agreement, the Company shall use commercially reasonable efforts to cause each Registration Statement filed under this Agreement (including under Section 3.3) to be declared effective under the Securities Act as promptly as reasonably practicable after the filing thereof, and shall use commercially reasonable efforts to keep such Registration Statement continuously effective under the Securities Act until the date that all Registrable Securities covered by such Registration Statement cease to be Registrable Securities (the "Effectiveness Period").

(c) If Form S-3 is not available for the registration of the resale of Registrable Securities hereunder, the Company shall (i) register the resale of the Registrable Securities on another appropriate form and (ii) use reasonable best efforts to register the Registrable Securities on Form S-3 as soon as such form is available, provided that the Company shall maintain the effectiveness of the Registration Statement then in effect until such time as the Registration Statement on Form S-3 covering the Registrable Securities has been declared effective by the SEC.

(d) Notwithstanding anything to the contrary contained herein, in no event shall the Company be permitted to name any Holder or affiliate of a Holder as any underwriter without the prior written consent of such Holder, except that a Holder may be named as a "statutory underwriter" if such Holder is, or is affiliated with, a broker-dealer and states such fact in its Selling Stockholder Questionnaire.

(e) The disposition of Registrable Securities from any Registration Statement may occur in one or more underwritten offerings, block transactions, broker transactions, at-market transactions or in such other manner or manners as may be specified by the Holders in accordance with applicable law.

2.2. Piggy-Back Registrations. If, at any time during the Effectiveness Period, there is not an effective Registration Statement covering all of the Registrable Securities and the Company shall determine to prepare and file with the SEC a registration statement relating to an offering for its own account or the account of others under the Securities Act of any of its equity securities, other than on Form S-4 or Form S-8 (each as promulgated under the Securities Act) or their then-equivalents relating to equity securities to be issued solely in connection with any acquisition of any entity or business or equity securities issuable in connection with the Company's employee benefit plans, then the Company shall deliver to each Holder a written notice of such determination and, if within 15 days after the date of the delivery of such notice, any such Holder shall so request in writing, the Company shall include in such registration statement all or any part of such Registrable Securities such Holder requests to be registered; provided, however, that the Company shall not be required to provide notice or otherwise register any Registrable Securities pursuant to this Section 2.2 that are the subject of a then-effective Registration Statement that is available for resales or other dispositions by such Holder; and provided, further, that if the Company intends to file a registration statement in connection with an underwritten public offering (an "Underwritten Offering"), and the managing underwriter has advised the Company in good faith that the inclusion of all of the Registrable Securities requested to be included by the Holders participating in such Underwritten Offering (including pursuant to this Section 2.2) shall be limited due to market conditions, the order of priority of the securities to be included in such offering shall be: (i) first, the primary securities to be included in such Underwritten Offering; (ii) second, any securities that the Holders request to include in such Registration Statement, on a pro rata basis, based on the number of requested securities; and (iii) any other securities that are requested to be included in such Registration Statement on a pro rata basis, based on the number of requested securities; provided that following the applicable Filing Date, the Company may not sell any securities in such Underwritten Offering until there is an effective Registration Statement covering all of the Registrable Securities outstanding as of such Filing Date.

3. Registration Procedures. In connection with the Company's registration obligations hereunder, the Company shall:

3.1. Not less than five Trading Days prior to the filing of a Registration Statement and not less than three Trading Day prior to the filing of any related Prospectus or any amendment or supplement thereto (including any document that would be incorporated or deemed to be incorporated therein by reference, but not including (A) any Exchange Act filing or (B) any supplement or post-effective amendment to a registration statement that is not related to the Registrable Securities), (i) furnish to each Holder copies of all such documents proposed to be filed, which documents (other than those incorporated or deemed to be incorporated by reference) will be subject to the review of such Holders, and (ii) cause its Representatives to respond to such inquiries as shall be necessary, in the reasonable opinion of respective counsel to each Holder, to conduct a reasonable investigation within the meaning of the Securities Act. The Company shall not file a Registration Statement or any such Prospectus or any amendments or supplements thereto to which the Holders of a majority of the Registrable Securities shall reasonably object in good faith, provided that the Company is notified of such objection in writing no later than four Trading Days

after the Holders have been so furnished copies of such Registration Statement or two Trading Days after the Holders have been so furnished copies of any related Prospectus or amendments or supplements thereto. As a condition for inclusion in any Registration Statement, each Holder agrees to furnish to the Company a completed questionnaire in a customary form containing such information regarding the Holder, the Registrable Securities held by the Holder and the distribution proposed by the Holder as may be reasonably requested by the Company and as shall be required under applicable Law (a "Selling Stockholder Questionnaire") on a date that is not less than five Trading Days prior to the Filing Date or by the end of the third Trading Day following the date on which such Holder receives draft materials in accordance with this Section.

3.2. Prepare and file with the SEC such amendments, including post-effective amendments, to the Registration Statement and the Prospectus used in connection therewith (subject to any requirement that a post-effective amendment be declared effective by the SEC) as may be necessary to keep the Registration Statement continuously effective as to the applicable Registrable Securities for the Effectiveness Period, (ii) cause the related Prospectus to be amended or supplemented by any required Prospectus supplement (subject to the terms of this Agreement), and, as so supplemented or amended, to be filed pursuant to Rule 424, (iii) respond as promptly as reasonably practicable to any comments received from the SEC with respect to the Registration Statement or any amendment thereto and provide as promptly as reasonably practicable to the Holders true and complete copies of all correspondence from and to the SEC relating to the Registration Statement (provided that, the Company shall excise any information contained therein which would constitute material non-public information regarding the Company or any of its Subsidiaries), and (iv) comply in all material respects with the applicable provisions of the Securities Act and the Exchange Act with respect to the disposition of all Registrable Securities covered by the Registration Statement in accordance (subject to the terms of this Agreement) with the intended methods of disposition by the Holders thereof set forth in such Registration Statement as so amended or in such Prospectus as so supplemented.

3.3. Notify the Holders of Registrable Securities to be sold (which notice shall, pursuant to clauses (c) through (f) hereof, be accompanied by an instruction to suspend the use of the Prospectus until the requisite changes have been made) as promptly as reasonably practicable (and, in the case of clause (a)(i) below, not less than three Trading Days prior to such filing) and, if requested by any such Holder, confirm such notice in writing no later than one Trading Day following the day:

(a) (i) when a Prospectus or any Prospectus supplement or post-effective amendment to a Registration Statement is proposed to be filed (other than (A) any Exchange Act filing or (B) any supplement or post-effective amendment to a Registration Statement that is not related to the Registrable Securities), (ii) when the SEC notifies the Company whether there will be a "review" of such Registration Statement and whenever the SEC comments in writing on such Registration Statement, and (iii) with respect to a Registration Statement or any post-effective amendment, when the same has become effective,

(b) of any request by the SEC or any other federal or state Governmental Authority for amendments or supplements to a Registration Statement or Prospectus or for additional information,

(c) of the issuance by the SEC or any other federal or state governmental authority of any stop order suspending the effectiveness of a Registration Statement covering any or all of the Registrable Securities or the initiation of any Proceedings for that purpose,

(d) of the receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Registrable Securities for sale in any jurisdiction, or the initiation or threatening of any Proceeding for such purpose,

(e) of the occurrence of any event or passage of time that makes the financial statements included in a Registration Statement ineligible for inclusion therein or any statement made in a Registration Statement or Prospectus or any document incorporated or deemed to be incorporated therein by reference untrue in any material respect or that requires any revisions to such Registration Statement, Prospectus or other documents so that, in the case of a Registration Statement or Prospectus, as the case may be, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and

(f) of the occurrence or existence of any pending corporate development with respect to the Company that the Company reasonably believes may be material and that, in the good faith determination of the Company, makes it not in the best interest of the Company to allow continued availability of a Registration Statement or Prospectus, provided, however, that any and all of such information shall remain confidential to the Holders until such information otherwise becomes public, unless disclosure by the Holders is required by Law; provided, further, that notwithstanding the Holder's agreement to keep such information confidential, the Holders make no acknowledgement that any such information is material, non-public information.

3.4. Use its best efforts to avoid the issuance of, or, if issued, obtain the withdrawal of (i) any order stopping or suspending the effectiveness of a Registration Statement, or (ii) any suspension of the qualification (or exemption from qualification) of any of the Registrable Securities for sale in any jurisdiction, at the earliest practicable moment.

3.5. If requested by a Holder, furnish to such Holder, without charge, at least one conformed copy of each Registration Statement and each amendment thereto, including financial statements and schedules, all documents incorporated or deemed to be incorporated therein by reference to the extent requested by such Person, and all exhibits to the extent requested by such Person (including those previously furnished or incorporated by reference) promptly after the filing of such documents with the SEC; provided, that any such item which is available on the EDGAR system (or successor thereto) need not be furnished in physical form.

3.6. Promptly deliver to each Holder, without charge, as many copies of the Prospectus and each amendment or supplement thereto as such Holder may reasonably request and, subject to the terms of this Agreement, consent to the use of such Prospectus and each amendment or supplement thereto by each of the Holders in connection with the offering and sale of the Registrable Securities covered by such Prospectus and any amendment or supplement thereto, except after the giving of any notice pursuant to Section 3.3(c) – (f) (until such time that the Prospectus has been updated pursuant to Section 3.9).

3.7. Prior to any resale of Registrable Securities by a Holder, use its commercially reasonable efforts to register such Registrable Securities for the resale by the Holder under the securities or Blue Sky laws of such jurisdictions within the United States as any Holder reasonably requests in writing, to keep each registration or qualification (or exemption therefrom) effective during the Effectiveness Period and to do any and all other acts or things necessary to enable the disposition in such jurisdictions of the Registrable Securities covered by each Registration Statement; provided, that, the Company shall not be required to qualify generally to do business in any jurisdiction where it is not then so qualified, subject the Company to any material tax in any such jurisdiction where it is not then so subject, or file a general consent to service of process in any such jurisdiction.

3.8. If requested by a Holder, cooperate with such Holder to facilitate the timely preparation and delivery of certificates representing Registrable Securities to be delivered to a transferee pursuant to a Registration Statement, which certificates shall be free, to the extent permitted by the Equity Purchase Agreement, of all restrictive legends, and to enable such Registrable Securities to be in such denominations and registered in such names as any such Holder may request.

3.9. Upon the occurrence of any event contemplated by Section 3.3, as promptly as reasonably practicable, prepare a supplement or amendment, including a post-effective amendment, to a Registration Statement or a supplement to the related Prospectus or any document incorporated or deemed to be incorporated therein by reference, and file any other required document so that, as thereafter delivered, neither such Registration Statement nor such Prospectus will 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 light of the circumstances under which they were made, not misleading. If the Company notifies the Holders in accordance with clauses (c) through (f) of Section 3.3 above to suspend the use of any Prospectus until the requisite changes to such Prospectus have been made, then the Holders shall suspend use of such Prospectus. The Company will use its best efforts to ensure that the use of the Prospectus may be resumed as promptly as is practicable. The Company shall be entitled to exercise its right under this Section 3.9 to suspend the availability of the Registration Statements and Prospectuses for a period not to exceed 60 calendar days (which need not be consecutive days) in any 12-month period.

3.10. Otherwise use reasonable best efforts to comply with all applicable rules and regulations of the SEC under the Securities Act and the Exchange Act, including, without limitation, Rule 172 under the Securities Act, file any final Prospectus, including any supplement or amendment thereof, with the SEC pursuant to Rule 424 under the Securities Act, promptly inform the Holders in writing if, at any time during the Effectiveness Period, the Company does not satisfy the conditions specified in Rule 172 and, as a result thereof, the Holders are required to deliver a Prospectus in connection with any disposition of Registrable Securities and take such other actions as may be reasonably necessary to facilitate the registration of the Registrable Securities hereunder. Comply with all applicable rules and regulations of the SEC, and make generally available to its security holders, as soon as reasonably practicable but no later than fifteen (15) months after the effective date of a Registration Statement, an earnings statement covering a period of twelve (12) months beginning after the effective date of a Registration Statement, in a manner which satisfies the provisions of Section 11(a) of the Securities Act and Rule 158 thereunder.

3.11. Use commercially reasonable efforts to maintain eligibility for use of Form S-3 (or any successor form thereto) for the registration of the resale of Registrable Securities.

3.12. Make available at reasonable times for inspection by any Holder, any managing underwriter participating in any disposition of such Registrable Securities pursuant to a Registration Statement, Holders' legal counsel and any attorney, accountant or other agent retained by any such Holder or any managing underwriter (each, an "Inspector" and collectively, the "Inspectors"), all financial and other records, pertinent corporate documents and properties of the Company and its subsidiaries (collectively, the "Records") as shall be reasonably necessary to enable them to exercise their due diligence responsibility, and cause the Company's and its subsidiaries' officers, directors and employees, and the independent public accountants of the Company, to supply all information reasonably requested by any such Inspector in connection with such Registration Statement. Notwithstanding the foregoing, Records and other information that the Company determines, in good faith, to be confidential and which it notifies the Inspectors are confidential shall not be disclosed by the Inspectors or used for any purpose other than as necessary or appropriate for the purpose of such inspection (and the Inspectors shall confirm their agreement in writing in advance to the Company if the Company shall so request) unless (a) the disclosure of such Records is necessary, in the Inspector's judgment, to avoid or correct a misstatement or omission in a Registration Statement, (b) the release of such Records is ordered pursuant to a subpoena or other order

from a court of competent jurisdiction after exhaustion of all appeals therefrom or (c) the information in such Records was known to the Inspectors on a non-confidential basis prior to its disclosure by the Company or has been made generally available to the public. Each Holder agrees that, if permitted by applicable law, such Holder will give notice to the Company upon learning that disclosure of such Records is sought in a court of competent jurisdiction, in order to allow the Company, at the Company's expense, to undertake appropriate action to prevent disclosure of the Records deemed confidential, and such Holder shall reasonably cooperate with the Company (at the Company's expense) in connection therewith. Notwithstanding the foregoing, the Company shall not disclose material nonpublic information to the Holders, or to advisors to or representatives of the Holders (including the Inspectors), unless prior to disclosure of such information the Company identifies such information as being material nonpublic information and provides the Investors, such advisors and representatives with the opportunity to accept or refuse to accept such material nonpublic information for review and any Investor wishing to obtain such information enters into an appropriate confidentiality agreement with the Company with respect thereto.

3.13. If such sale is pursuant to an underwritten offering, (a) obtain "comfort" letters dated the pricing and closing dates of such offering under the underwriting agreement from the Company's independent public accountants in customary form and covering such matters of the type customarily covered by "comfort" letters as Holders' legal counsel or the managing underwriter reasonably requests; (b) enter into a customary underwriting agreement with the underwriter containing customary representations and warranties, covenants and legal opinions addressed to the underwriters; (c) take other such actions as reasonably required in order to expedite or facilitate the disposition of such Registrable Securities, including causing its officers to participate in "road shows" and other information meetings organized by the underwriters, if applicable, of reasonable and customary duration and frequency (but not to exceed three days in each instance); or (d) deliver such documents and certificates as may be reasonably requested and as are customarily delivered in similar offerings.

3.14. Provide reasonable cooperation to each seller of Registrable Securities and each underwriter participating in the disposition of such Registrable Securities and their respective counsel in connection with any filings required to be made with the Financial Industry Regulatory Authority ("FINRA") pursuant to FINRA Rule 5110 as requested by such Holder.

3.15. Use reasonable best efforts to cause all Registrable Securities covered by a Registration Statement to be listed on the Trading Market on which the Company's Common Stock is then listed.

3.16. With a view to making available to the Holders the benefits of Rule 144 (or its successor rule) and any other rule or regulation of the SEC that may at any time permit the Holders to sell Common Stock to the public without registration, the Company covenants and agrees to: (a) make and keep public information available, as those terms are understood and defined in Rule 144, until such date as there are no longer Registrable Securities; (b) file with the SEC in a timely manner all reports and other documents required of the Company under the Exchange Act; and (c) furnish electronically to each Holder upon request, as long as such Holder owns any Registrable Securities, (i) a written statement by the Company that it has complied with the reporting requirements of the Exchange Act, (ii) a copy of or electronic access to the Company's most recent Annual Report on Form 10-K or Quarterly Report on Form 10-Q, and (C) such other information as may be reasonably requested in order to avail such Holder of any rule or regulation of the SEC that permits the selling of any such Registrable Securities without registration.

The Company may require each selling Holder to furnish to the Company a certified statement as to the number of shares of Common Stock beneficially owned by such Holder and, if required by the SEC, the natural persons thereof that have voting and dispositive control over the shares.

4. Registration Expenses.

4.1. All fees and expenses incident to the performance of or compliance with the Company's obligations under this Agreement by the Company shall be borne by the Company, whether or not any Registrable Securities are sold pursuant to a Registration Statement. The fees and expenses referred to in the foregoing sentence shall include (i) all registration and filing fees (including fees and expenses of the Company's counsel and independent registered public accountants), including fees and expenses (A) with respect to filings made with the SEC, (B) with respect to filings required to be made with any Trading Market on which the Common Stock is then listed for trading, and (C) in compliance with applicable state securities or Blue Sky laws reasonably requested by any Holder in writing pursuant to Section 3.7 (including fees and disbursements of counsel for the Company in connection with Blue Sky qualifications or exemptions of the Registrable Securities), (ii) printing expenses (including expenses of printing Prospectuses or certificates for Registrable Securities), (iii) messenger, telephone and delivery expenses, (iv) fees and disbursements of counsel for the Company, (v) Securities Act liability insurance, if the Company so desires such insurance, (vi) fees and expenses of all other Persons retained by the Company in connection with the consummation of the transactions contemplated by this Agreement, and (vii) the reasonable fees and disbursements of one counsel for the Holders (the "Selling Holder Counsel"), which shall not exceed $25,000 in the aggregate per Registration Statement.

4.2. In addition, the Company shall be responsible for all of its internal expenses incurred in connection with the consummation of the transactions contemplated by this Agreement (including all salaries and expenses of its officers and employees performing legal or accounting duties), the expense of any annual audit and the fees and expenses incurred in connection with the listing of the Registrable Securities on any securities exchange as required hereunder.

4.3. In no event shall the Company be responsible for any broker or similar commissions of any Holder or, except to the extent provided for in the Equity Purchase Agreement, any legal fees (other than the Selling Holder Counsel) or other costs of the Holders.

5. Indemnification.

5.1. Indemnification by the Company. The Company shall, notwithstanding any termination of this Agreement, indemnify and hold harmless each Holder and the Holder's officers, directors, members, stockholders, partners, agents and employees, agents, brokers (including brokers who offer and sell Registrable Securities as principal as a result of a pledge or any failure to perform under a margin call of Common Stock), and investment advisors (and any other Persons with a functionally equivalent role of a Person holding such titles, notwithstanding a lack of such title or any other title) of each of them, each Person who controls any such Holder (within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act) and the officers, directors, members, stockholders, partners, agents and employees (and any other Persons with a functionally equivalent title or any other title) of each such controlling Person (collectively, the "Representatives"), to the fullest extent permitted by applicable Law, from and against any and all losses, penalties, judgments, suits, costs, claims, damages, liabilities, settlement costs and expenses, joint or several (including reasonable costs of investigation and legal expenses) (each, a "Loss", and collectively, "Losses"), as incurred, arising out of, relating to or based upon (i) any untrue or alleged untrue statement of a material fact contained in a Registration Statement, any Prospectus or any form of prospectus or in any amendment or supplement thereto or documents incorporated by reference therein or in any preliminary prospectus, (ii) any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading or (iii) any violation or alleged violation by the Company of the Securities Act, the Exchange Act or any state securities Law, or any rule or regulation under such Laws, in connection with the

performance of its obligations under this Agreement, except to the extent, but only to the extent, that such untrue statements or omissions are based solely upon information regarding such Holder furnished in writing to the Company by such Holder expressly for use therein, or to the extent that such information relates to such Holder or such Holder's proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in such Registration Statement, such Prospectus or in any amendment or supplement thereto (it being understood that the Holder has approved Annex A hereto for this purpose). No investigation by any Holder or the Representatives or knowledge by any Holder or the Representatives of any facts or circumstances shall affect the Company's indemnification obligations under this Section 5.1. The Company shall notify the Holders promptly upon becoming aware of the institution, threat or assertion of any Proceeding arising from or in connection with the transactions contemplated by this Agreement. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of such indemnified person and shall survive the transfer of any Registrable Securities by any of the Holders in accordance with Section 6.7.

5.2. Indemnification by Holders. Each Holder shall, severally and not jointly, indemnify and hold harmless the Company and its Representatives to the fullest extent permitted by applicable Law, from and against all Losses, as incurred, to the extent arising solely out of or based solely upon: (i) any untrue or alleged untrue statement of a material fact contained in any Registration Statement, any Prospectus, or in any amendment or supplement thereto or in any preliminary prospectus, or (ii) any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading, in each case, to the extent, but only to the extent, that (A) such untrue statement or omission is based solely upon information furnished in writing by such Holder to the Company expressly for inclusion in such Registration Statement or such Prospectus or (B) such information relates to such Holder's information provided in the Selling Stockholder Questionnaire or the proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in such Registration Statement (it being understood that the Holder has approved Annex A hereto for this purpose), such Prospectus or in any amendment or supplement thereto. In no event shall the liability of a Holder be greater in amount than the dollar amount of the proceeds (net of all expenses paid by such Holder in connection with any claim relating to this Section 5 and the amount of any damages such Holder has otherwise been required to pay by reason of such untrue statement or omission) received by such Holder upon the sale of the Registrable Securities included in such Registration Statement giving rise to such indemnification obligation.

5.3. Conduct of Indemnification Proceedings.

(a) If any Proceeding shall be brought or asserted against any Person entitled to indemnity hereunder (an "Indemnified Party"), such Indemnified Party shall promptly notify the Person from whom indemnity is sought (the "Indemnifying Party") in writing, and the Indemnifying Party shall have the right to assume the defense thereof, including the employment of counsel reasonably satisfactory to the Indemnified Party and the payment of all reasonable fees and expenses incurred in connection with defense thereof; provided, that, the failure of any Indemnified Party to give such notice shall not relieve the Indemnifying Party of its obligations or liabilities pursuant to this Agreement, except (and only) to the extent that it shall be finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) that such failure shall have materially and adversely prejudiced the Indemnifying Party.

(b) The Indemnifying Party may jointly with any other Indemnifying Party, assume the defense of such Proceeding upon notice to the Indemnified Party (which notice shall include an acknowledgment of the Indemnifying Party's obligation to indemnify the Indemnified Party for Losses related to such Proceeding), with counsel reasonably satisfactory to such Indemnified Party. An

Indemnified Party shall have the right to employ separate counsel in any such Proceeding and to participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnified Party unless: (i) the Indemnifying Party has agreed in writing to pay such fees and expenses, (ii) the Indemnifying Party shall have failed promptly to assume the defense of such Proceeding and to employ counsel reasonably satisfactory to such Indemnified Party in any such Proceeding, or (iii) the named parties to any such Proceeding (including any impleaded parties) include both such Indemnified Party and the Indemnifying Party, and counsel to the Indemnified Party shall reasonably believe that a material conflict of interest is likely to exist if the same counsel were to represent such Indemnified Party and the Indemnifying Party (in which case, if such Indemnified Party notifies the Indemnifying Party in writing that it elects to employ separate counsel at the expense of the Indemnifying Party, the Indemnifying Party shall not have the right to assume the defense thereof and the reasonable fees and expenses of no more than one separate counsel shall be at the expense of the Indemnifying Party). The Indemnifying Party shall not be liable for any settlement of any such Proceeding effected without its written consent, which consent shall not be unreasonably withheld or delayed, but if settled with such consent or if there be a judgment for the plaintiff, the Indemnifying Party agrees to indemnify each Indemnified Party from and against any Losses by reason of such settlement or judgment. No Indemnifying Party shall, without the prior written consent of the Indemnified Party, effect any settlement of any pending Proceeding in respect of which any Indemnified Party is a party, unless such settlement includes (A) an unconditional release of such Indemnified Party from all liability on claims that are the subject matter of such Proceeding and (B) does not include a statement as to or an admission of fault, culpability or a failure to act on behalf of any Indemnified Party.

(c) Subject to the terms of this Agreement, all Losses and reasonable fees and expenses of the Indemnified Party (including reasonable fees and expenses to the extent incurred in connection with investigating or preparing to defend such Proceeding in a manner not inconsistent with this Section) shall be paid to the Indemnified Party, as incurred, within ten Trading Days of written notice thereof to the Indemnifying Party; provided, that, the Indemnified Party shall promptly reimburse the Indemnifying Party for that portion of such fees and expenses applicable to such actions for which such Indemnified Party is finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) not to be entitled to indemnification hereunder.

5.4. Contribution.

(a) If the indemnification under Section 5.1 or Section 5.2 is unavailable to an Indemnified Party or insufficient to hold an Indemnified Party harmless for any Losses, then each Indemnifying Party shall contribute to the amount paid or payable by such Indemnified Party, in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party and Indemnified Party in connection with the actions, statements or omissions that resulted in such Losses as well as any other relevant equitable considerations. The relative fault of such Indemnifying Party and Indemnified Party shall be determined by reference to, among other things, whether any action in question, including any untrue or alleged untrue statement of a material fact or omission or alleged omission of a material fact, has been taken or made by, or relates to information supplied by, such Indemnifying Party or Indemnified Party, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such action, statement or omission. The amount paid or payable by a party as a result of any Losses shall be deemed to include, subject to the limitations set forth in this Agreement, any reasonable attorneys' or other reasonable fees or expenses incurred by such party in connection with any Proceeding to the extent such party would have been indemnified for such fees or expenses if the indemnification provided for in this Section was available to such party in accordance with its terms.

(b) The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 5.4 were determined by pro rata allocation or by any other method of

allocation that does not take into account the equitable considerations referred to in the immediately preceding paragraph. In no event shall the contribution obligation of a Holder of Registrable Securities be greater in amount than the dollar amount of the proceeds (net of all expenses or other obligations paid by such Holder in connection with any claim relating to this Section 5 and the amount of any damages such Holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission) received by it upon the sale of the Registrable Securities giving rise to such contribution obligation.

6. Miscellaneous.

6.1. Remedies. In the event of a breach by the Company or by a Holder of any of their respective obligations under this Agreement, each Holder or the Company, as the case may be, in addition to being entitled to exercise all rights granted by law and under this Agreement, including recovery of damages, shall be entitled to specific performance of its rights under this Agreement, without posting bond or other security, and without the necessity of proving actual or threatened damages, which remedy such damaged party will be entitled to seek in any court of competent jurisdiction. Each of the Company and each Holder agrees that monetary damages would not provide adequate compensation for any losses incurred by reason of a breach by it of any of the provisions of this Agreement and hereby further agrees that, in the event of any action for specific performance in respect of such breach, it shall not assert or shall waive the defense that a remedy at law would be adequate.

6.2. Amendments and Waivers. The provisions of this Agreement, including the provisions of this sentence, may not be amended, modified or supplemented, and waivers or consents to departures from the provisions hereof may not be given, unless the same shall be in writing and signed by the Company and the Investor.

6.3. Notices. Any consent, notice, report or other communication required or permitted to be given or made under this Agreement by one of the parties to the other party will be delivered in writing by one of the following means and be effective: (a) upon receipt, if delivered personally; (b) when sent, if sent via e-mail (provided that such sent e-mail is kept on file (whether electronically or otherwise) by the sending party and the sending party does not immediately receive an automatically generated message from the recipient's e-mail server that such e-mail could not be delivered to such recipient); or (c) when delivered by a reputable, commercial overnight courier; provided in all cases addressed to such other party at its address indicated below, or to such other address as the addressee will have last furnished in writing to the addressor and will be effective upon receipt by the addressee.

If to the Investor, to:

Ultragenyx Pharmaceutical Inc.
60 Leveroni Court
Novato, CA 94949
Attn: Chief Business Officer
Email: Tkassberg@ultragenyx.com

with a copy (which shall not constitute notice) to:

Shearman & Sterling LLP
599 Lexington Avenue
New York, NY 10022 6069
Attention: Robert Masella
J. Russel Denton
Email: Robert.Masella@Shearman.com
Russ.Denton@Shearman.com

If to the Company:

Arcturus Therapeutics, Inc.
10628 Science Center Drive, Suite 250
San Diego, CA 92121
Attn: Chief Executive Officer
Email: joe@arcturusrx.com

with a copy (which shall not constitute notice) to:

Dentons US LLP
1221 Avenue of the Americas
New York, NY 10020-1089
Attn: Jeffrey Baumel
Email: jeffrey.baumel@dentons.com

Written confirmation of receipt (i) given by the recipient of such notice, or (ii) provided by an overnight courier service shall be rebuttable evidence of personal service or receipt from an overnight courier service in accordance with clause (a) or (c) above, respectively. A copy of the e-mail transmission containing the time, date and recipient e-mail address shall be rebuttable evidence of receipt by e-mail in accordance with clause (b) above.

6.4. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the successors and permitted assigns of each of the parties and shall inure to the benefit of each Holder. The Company may not assign (except by merger) its rights or obligations hereunder without the prior written consent of the Investor. A Holder may transfer or assign, in whole or from time to time in part, to one or more persons its rights hereunder in connection with the transfer of Registrable Securities by such Holder to such person; provided that such Holder complies with all Laws applicable thereto and provides written notice of assignment to the Company promptly after such assignment is effected and such transferee or assignee agrees in writing to be bound by the terms hereof.

6.5. No Inconsistent Agreements. Neither the Company nor any of its Subsidiaries has entered, as of the date hereof, nor shall the Company or any of its Subsidiaries, on or after the date of this Agreement, enter into any agreement with respect to its securities, that would have the effect of impairing the rights granted to the Holders in this Agreement or otherwise conflicts with the provisions hereof. Neither the Company nor any of its Subsidiaries has previously entered into any agreement granting any registration rights with respect to any of its securities to any Person that have not been satisfied in full.

6.6. No Strict Construction. This Agreement has been prepared jointly and will not be construed against either party. No presumption as to construction of this Agreement shall apply against either party with respect to any ambiguity in the wording of any provision(s) of this Agreement irrespective of which party may be deemed to have authored the ambiguous provision(s).

6.7. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original but which together shall constitute one and the same instrument. In the event that any signature is delivered by facsimile transmission or by an e-mail which contains a portable document format (.pdf) file of an executed signature page, such executed signature page shall create a valid and binding obligation of the party executing it (or on whose behalf such signature page is executed) with the same force and effect as if such executed signature page were an original thereof.

6.8. Governing Law; Submission to Jurisdiction. This Agreement shall be governed by and construed in accordance with the Laws of the State of Delaware, without regard to the conflict of Laws principles thereof that would require the application of the Law of any other jurisdiction. Any Action brought, arising out of, or relating to this Agreement shall be brought in the Court of Chancery of the State of Delaware; provided, however, that if such court does not have jurisdiction over such Action, such Action shall be heard and determined exclusively in any federal court located in the State of Delaware. Each party hereby irrevocably submits to the exclusive jurisdiction of said courts in respect of any claim relating to the validity, interpretation and enforcement of this Agreement, and hereby waives, and agrees not to assert, as a defense in any Action in which any such claim is made that it is not subject thereto or that such Action may not be brought or is not maintainable in such courts, or that the venue thereof may not be appropriate or that this Agreement may not be enforced in or by such courts. The parties hereby consent to and grant the Court of Chancery of the State of Delaware and any federal court sitting in the State of Delaware jurisdiction over such parties and over the subject matter of any such Action and agree that mailing of process or other papers in connection with any such Action in the manner provided in Section 6.4 or in such other manner as may be permitted by Law, shall be valid and sufficient thereof.

6.9. Waiver of Jury Trial. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY WITH RESPECT TO ANY LITIGATION AMONG THE PARTIES DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY. EACH OF THE PARTIES HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THAT FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTY HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY, AS APPLICABLE, BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

6.10. Severability. If any provision of this Agreement is held to be illegal, invalid or unenforceable under any present or future Law, and if the rights or obligations of a party under this Agreement will not be materially and adversely affected thereby, (a) such provision shall be fully severable, (b) this Agreement shall be construed and enforced as if such illegal, invalid or unenforceable provision had never comprised a part hereof, (c) the remaining provisions of this Agreement shall remain in full force and effect and shall not be affected by the illegal, invalid or unenforceable provision or by its severance herefrom and (d) in lieu of such illegal, invalid or unenforceable provision, the parties shall negotiate in good faith a substitute legal, valid and enforceable provision as similar in terms to such illegal, invalid or unenforceable provision as possible and as reasonably acceptable to the parties

(Signature Pages Follow)

IN WITNESS WHEREOF, the parties have executed and delivered this Agreement as of the date first above written.

ARCTURUS THERAPEUTICS HOLDINGS INC.

By: /s/ Joseph E. Payne
Name: Joseph E. Payne
Title: Chief Executive Officer

ULTRAGENYX PHARMACEUTICAL INC.

By: /s/ Emil D. Kakkis
Name: Emil D. Kakkis
Title: President and Chief Executive Officer

Annex A

PLAN OF DISTRIBUTION

We are registering the shares of common stock on behalf of the Selling Stockholders. Each Selling Stockholder and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the principal Trading Market or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at negotiated prices or negotiated prices. A Selling Stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- exchange distributions in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales;
- transactions through broker-dealers that agree with the Selling Stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The Selling Stockholders may also sell securities under Rule 144 or any other exemption from registration under the Securities Act of 1933, as amended (the "Securities Act"), if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Stockholders may arrange for other broker-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the Selling Stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

In connection with the sale of the securities or interests therein, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The Selling Stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge

the securities to broker-dealers that in turn may sell these securities. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each Selling Stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the Selling Stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act. We will not receive any of the proceeds from the sale by the Selling Stockholders.

We agreed to keep this prospectus effective until the earlier of (i) following the date in which [the Investor] has acquired all of the [Additional Securities] under the [Equity Purchase Agreement] or the [Investor]'s right to acquire the [Additional Securities] under the [Equity Purchase Agreement] has terminated, the date that the securities may be resold by the Selling Stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect or (ii) the date that all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the Selling Stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the common stock by the Selling Stockholders or any other person. We will make copies of this prospectus available to the Selling Stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

Exhibit 10.1

EQUITY PURCHASE AGREEMENT

THIS EQUITY PURCHASE AGREEMENT (this "***Agreement***") is made as of June 18, 2019, by and among Ultragenyx Pharmaceutical Inc., a Delaware corporation (the "***Investor***"), Arcturus Therapeutics Ltd., an Israeli incorporated company ("***Arcturus-Israel***"), and Arcturus Therapeutics Holdings Inc., a newly incorporated Delaware corporation ("***Arcturus-Delaware***").

WHEREAS, on June 18, 2019 (the "***Effective Date***"), the Company's wholly-owned subsidiary, Arcturus Therapeutics, Inc., a Delaware corporation ("***Arcturus***"), and the Investor entered into Amendment No. 3 (the "***Amendment***") to the Research Collaboration and License Agreement, dated as of October 26, 2015 (the "***Collaboration Agreement***"), by and between Arcturus and the Investor;

WHEREAS, on June 12, 2019, Arcturus-Israel exchanged all its outstanding ordinary shares, par value NIS 0.07 per share, of Arcturus-Israel, for shares of common stock, par value $0.001 per share ("***Common Stock***"), of Arcturus-Delaware in connection with the redomicile of Arcturus-Israel from Israel to the State of Delaware pursuant to the terms of an Exchange Agreement entered into by Arcturus-Delaware and Arcturus-Israel on February 8, 2019, (the "***Redomiciliation***");

WHEREAS, as contemplated by the Amendment and pursuant to the terms and subject to the conditions set forth in this Agreement, the Company desires to issue and sell to the Investor, and the Investor desires to subscribe for and purchase from the Company, at the Closing, 2,400,000 shares of Common Stock (the "***Shares***"), for a purchase price of $10.00 per share;

WHEREAS, as contemplated by the Amendment and pursuant to the terms and subject to the conditions set forth in this Agreement, the Company desires to grant to the Investor the right, but not the obligation, to purchase from the Company, at a subsequent closing on or before the second anniversary of the Effective Date (such date, as it may be extended pursuant to Section 3.1(b), the "***Expiration Date***"), up to 600,000 additional shares of Common Stock (the "***Additional Shares***") for a purchase price per Additional Share equal to the Additional Share Price; and

WHEREAS, the Company and the Investor are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by the provisions of Regulation D, as promulgated by the U.S. Securities and Exchange Commission (the "***Commission***") under the Securities Act of 1933, as amended (the "***Securities Act***").

NOW, THEREFORE, in consideration of the following mutual promises and obligations, and for good and valuable consideration, the adequacy and sufficiency of which are hereby acknowledged, the Investor, Arcturus-Israel and Arcturus-Delaware agree as follows:

1. **Definitions**.

1.1. **Defined Terms**. When used in this Agreement, the following terms shall have the respective meanings specified therefor below:

"*13D Group*" has the meaning set forth in Section 6.1(c).

"*Action*" means any civil, criminal or administrative litigation, claim, action, suit, arbitration, hearing, inquiry, investigation or other similar proceeding by or before any Governmental Authority.

"*Additional Closing*" has the meaning set forth in Section 3.2.

"*Additional Closing Date*" has the meaning set forth in Section 3.2.

"*Additional Closing Representations*" means the representations and warranties set forth in Sections 4.1, 4.2, 4.3 and 4.4.

"*Additional Share Price*" means $16.00, subject to adjustment as set forth in Section 9.1.

"*Additional Shares*" has the meaning set forth in the Recitals.

"*Affiliate*" means, with respect to a specified Person, any other Person which controls, is controlled by or is under common control with the applicable Person. As used herein, "controls", "control" and "controlled" means the possession, direct or indirect, of the power to direct the management and policies of a Person, whether through the ownership of voting interests of such Person, through contract or otherwise; provided that the Company and its subsidiaries shall not be deemed Affiliates of the Investor or its subsidiaries.

"*Affiliated Persons*" has the meaning set forth in Section 6.7(f).

"*Aggregate Purchase Price*" has the meaning set forth in Section 2.1.

"*Agreement*" has the meaning set forth in the Preamble.

"*Amendment*" has the meaning set forth in the Recitals.

"*Applicable SEC Documents*" has the meaning set forth in Section 4.7(a).

"*Arcturus*" has the meaning set forth in the Recitals.

"*Arcturus-Delaware*" has the meaning set forth in the Preamble.

"*Arcturus-Israel*" has the meaning set forth in the Preamble.

"*Business Day*" means a day on which commercial banking institutions in San Diego, California and New York, New York are open for business.

"*Change of Control*" has the meaning set forth in Section 6.3(a)(i).

"*Closing*" has the meaning set forth in Section 2.2.

"*Closing Date*" has the meaning set forth in Section 2.2.

"*Collaboration Agreement*" has the meaning set forth in the Recitals.

"*Commission*" has the meaning set forth in the Recitals.

"*Common Stock*" has the meaning set forth in the Recitals.

"*Company*" means, prior to the Redomiciliation, Arcturus-Israel, and, after the Redomiciliation, Arcturus-Delaware.

"*Company Equity Plans*" means (i) the Company's 2018 Omnibus Equity Incentive Plan, (ii) the Company's 2013 Equity Incentive Plan, (iii) the Company's 2010 Incentive Option Plan and (iv) the Company's 2019 Omnibus Equity Incentive Plan.

"*Company Fundamental Representations*" has the meaning set forth in Section 7.1(a).

"*Company Securities*" has the meaning set forth in Section 4.5(a).

"*Company Studies and Trials*" has the meaning set forth in Section 4.24(b).

"*Continuing Directors*" means the directors of the Company on the date hereof, and each other director, if, in each case, such other director's nomination for election to the Company's board of directors was recommended by, or whose appointment to the Company's board of directors was approved by, at least a majority of the other Continuing Directors.

"*Controlling Stake*" has the meaning set forth in Section 6.3(c).

"*Covered Person*" has the meaning set forth in Section 4.15.

"*Effective Date*" has the meaning set forth in the Recitals.

"*Environmental Laws*" means any Laws relating to the protection of human health and safety, the environment or hazardous or toxic substances or wastes, pollutants or contaminants.

"*Equitable Exceptions*" has the meaning set forth in Section 4.2.

"*Exchange Act*" means the Securities Exchange Act of 1934, as amended.

"*Exercise Notice*" has the meaning set forth in Section 3.2.

"*Expiration Date*" has the meaning set forth in the Recitals.

"*Financial Statements*" has the meaning set forth in Section 4.7(a).

"*GAAP*" means United States generally accepted accounting principles.

"*Governmental Authority*" means any applicable government authority, court, tribunal, arbitrator, agency, department, legislative body, commission, regulatory or administrative authority or other instrumentality of (a) any government of any country or territory, (b) any nation, state, province, county, city or other political subdivision thereof, (c) any supranational body or (d) any self-regulatory organization.

"*Initial Designee*" has the meaning set forth in Section 6.7(a).

"*Intellectual Property Assets*" has the meaning set forth in Section 4.24(a).

"*Intellectual Property Rights*" has the meaning set forth in Section 4.24(a).

"*Investor*" has the meaning set forth in the Preamble.

"*Investor Designee*" has the meaning set forth in Section 6.7(a).

"*Investor Fundamental Representations*" has the meaning set forth in Section 7.2(a).

"*Investor Observer*" has the meaning set forth in Section 6.7(a).

"*Investor Party*" has the meaning set forth in Section 6.5(a).

"*Law*" or "*Laws*" means any federal, national, supranational, state, provincial, local or similar laws, statutes, rules, codes, regulations, writs, orders, judgments, decrees, injunctions, awards, executive orders, rulings and/or ordinances of any Governmental Authority, including any common law.

"*Liens*" means all pledges, liens (including environmental and tax liens), restrictions on transfer, preemptive rights, charges, mortgages, encumbrances, security interests, conditional and installment sale agreements or other claims of third parties or restrictions of any kind whatsoever, including any easement, reversion interest, right of way or other encumbrance to title, limitations on voting rights, or any option, right of first refusal or right of first offer.

"*Material Adverse Effect*" means any event, change, fact, development, occurrence or effect (each, an "*Effect*") that, individually or collectively with one or more other Effects, (a) has had a material adverse effect on the business, assets, liabilities, financial condition, prospects or results of operations of the Company and its Subsidiaries, taken as a whole or (b) prevents or materially delays the ability of the Company to perform its obligations under, or consummate, the transactions contemplated by, this Agreement; provided that, solely for purposes of clause (a) of this definition, none of the following matters, either alone or in combination, will constitute, or be considered in determining whether there has been, a Material Adverse Effect: (i) any outbreak or escalation of war or major armed hostilities or any act of terrorism, (ii) changes in applicable laws, rules, regulations or GAAP after the date of this Agreement, (iii) changes that generally affect the industry in which the Company operates, (iv) changes in financial markets, general economic conditions or political conditions, (v) changes in the trading price or trading volume of the Common Stock, and (vi) failure by the Company to meet any published or internally prepared projections, budgets, plans or forecasts of revenues, earnings or other financial performance measures or operating statistics, except, in the case of clauses (i) through (iv), to the extent those Effects have a disproportionate effect on the Company and its Subsidiaries, taken as a whole, as compared to other similarly situated companies operating in the industry in which the Company and its Subsidiaries operate, and with respect to clauses (v) and (vi), it being understood that the facts and circumstances underlying any such change or failure that are not otherwise expressly excluded in clauses (i) through (vi) herein from the definition of a "Material Adverse Effect" may be considered in determining whether there has been a Material Adverse Effect.

"*Material Contract*" has the meaning set forth in Section 4.12.

"*Money Laundering Laws*" has the meaning set forth in Section 4.19.

"*Nasdaq*" has the meaning set forth in Section 4.2(b).

"*Offered Securities*" has the meaning set forth in Section 6.4.

"*Organizational Documents*" means (i) with respect to Arcturus Therapeutics Ltd., the Articles of Association of Arcturus Therapeutics Ltd., filed on November 30, 2017, and all bylaws of Arcturus Therapeutics Ltd., and (ii) with respect to Arcturus-Delaware, the Certificate of Incorporation of Arcturus-Delaware and the Bylaws of Arcturus-Delaware, in the forms attached as Exhibit B and Exhibit C, respectively, to the Company's Registration Statement on Form S-4, filed on April 11, 2019.

"*Permits*" has the meaning set forth in Section 4.26(c).

"*Permitted Issuance*" has the meaning set forth in Section 3.5(a).

"*Person*" means any individual, partnership, limited liability company, firm, corporation, association, trust, unincorporated organization, government or any department or agency thereof or other entity, as well as any syndicate or group that would be deemed to be a Person under Section 13(d)(3) of the Exchange Act.

"*Preferred Stock*" has the meaning set forth in Section 4.5(a).

"*Redomiciliation*" has the meaning set forth in the Recitals.

"*Registration Rights Agreement*" has the meaning set forth in Section 2.3.

"*Replacement Designee*" has the meaning set forth in Section 6.7(a).

"*Rule 144*" means Rule 144 promulgated under the Securities Act.

"*Rule 506*" has the meaning set forth in Section 4.21.

"*Sanctions*" has the meaning set forth in Section 4.18.

"*SEC Reports*" has the meaning set forth in Section 4.

"*Securities Act*" has the meaning set forth in the Recitals.

"*Shares*" has the meaning set forth in the Recitals.

"*Significant Event*" has the meaning set forth in Section 6.3(c).

"*Special Committee*" has the meaning set forth in Section 6.7(c).

"*Stock Event*" has the meaning set forth in Section 9.1.

"*Subsidiary*" of any Person means any corporation, limited liability company, partnership, limited partnership, association, trust, unincorporated organization or other legal entity of which such Person (either alone or through or together with any other Subsidiary) owns, directly or indirectly, a majority of the stock or other equity interests, the holders of which are generally entitled to vote for the election of the board of directors or other governing body of such corporation or other legal entity, or any Person that would otherwise be deemed a "subsidiary" under Rule 12b 2 promulgated under the Exchange Act.

"*Termination Date*" has the meaning set forth in Section 8.1(b).

"*Third Party*" means any Person (other than a Governmental Authority) other than the Investor, the Company or any Affiliate of the Investor or the Company.

"*Threshold*" has the meaning set forth in Section 3.1(b).

"*Total Voting Power*" has the meaning set forth in Section 6.3(a)(i).

"*Transaction*" means the issuance and sale of the Shares by the Company, and the purchase of the Shares by the Investor, in accordance with the terms hereof.

"*Transfer*" has the meaning set forth in Section 6.2.

"*Transfer Agent*" has the meaning set forth in Section 2.3.

2. **Purchase and Sale of Shares**.

2.1. **Shares**. Subject to the terms and conditions of this Agreement, at the Closing, the Company shall issue and sell to the Investor and the Investor shall purchase from the Company, the Shares at a cash purchase price of $10.00 per share for an aggregate purchase price of $24,000,000 (the "***Aggregate Purchase Price***").

2.2. **Closing Date**. The closing of the purchase and sale of the Shares hereunder (the "***Closing***") shall occur remotely via the exchange of documents and signatures on the third Business Day after all conditions for Closing set forth in Section 7 have been satisfied or, to the extent permitted, waived (other than those conditions that by their nature are to be satisfied at the Closing, but subject to their satisfaction or, to the extent permitted, waiver at the Closing), or at such other time, date and location as the Company and the Investor may mutually agree in writing. The date the Closing occurs is hereinafter referred to as the "***Closing Date***".

2.3. **Deliveries**. At the Closing, the Company shall deliver, or cause to be delivered, to the Investor the Shares in book-entry form, and the Company shall instruct its transfer agent for the shares of Common Stock (the "***Transfer Agent***") to register such issuance at the time of such issuance. At the Closing, the Investor shall deliver to the Company an amount in cash equal to the Aggregate Purchase Price, by wire transfer of immediately available funds to a bank account designated in writing by the Company not less than two (2) Business Days before the Closing Date. At or prior to the Closing, the Company and the Investor shall execute and deliver the Registration Rights Agreement, in the form attached hereto as Exhibit A (the "***Registration Rights***

Agreement"), and any related agreements or other documents required to be executed hereunder or reasonably requested by the other party hereto.

3. **Purchase and Sale of Additional Shares**.

3.1. **Additional Shares**.

(a) During the period beginning on the Closing Date and ending on the Expiration Date, the Investor shall have the right, but not the obligation, to purchase, and to direct the Company to issue and sell to the Investor, by its delivery to the Company of an Exercise Notice, the Additional Shares. Upon delivery to the Company of an Exercise Notice, the Investor shall have the obligation to purchase, and the Company shall have the obligation to sell to the Investor, the Additional Shares, subject to the terms and conditions set forth in this Agreement, including Section 3.1(b).

(b) Notwithstanding the foregoing provisions of Section 3.1(a), in the event purchasing all of the Additional Shares would result in Investor and its Affiliates owning in excess of 19.99% of the then-issued and outstanding shares of Common Stock immediately after giving effect to such purchase (the "***Threshold***"), Investor shall only be entitled to purchase that number of Additional Shares that would result in Investor and its Affiliates owning a number of shares of Common Stock equal to the Threshold. In the event that the Investor is not permitted to purchase all of the Additional Shares due to the foregoing sentence, (A) the Expiration Date shall be extended until the earlier of (x) such time as the Investor may purchase any remaining portion of the Additional Shares and (y) the fourth anniversary of the Effective Date and (B) the Investor shall be permitted to submit one or more additional Exercise Notices to effect the purchase of the Additional Shares not purchased as a result of the first sentence of this Section 3.1(b). Any Additional Shares not purchased by the Investor are referred to herein as the "***Additional Unpurchased Shares***."

(c) Within two (2) Business Days (i) after the end of each month prior to the earlier of (A) the Expiration Date and (B) the date on which all Additional Shares have been purchased by the Investor, and (ii) after a request by the Investor for such information, the Company shall deliver to the Investor a written statement indicating (x) the number of shares of Common Stock issued and outstanding on such date and (y) the number of Additional Unpurchased Shares that the Investor would be permitted to purchase without exceeding the Threshold.

(d) Notwithstanding the Threshold, in the event there are Additional Unpurchased Shares as of immediately prior to the closing of a Change of Control, then, immediately prior to the Closing of a Change of Control in circumstances where the fair market value of the consideration to be received in respect of a share of Common Stock in such Change of Control as reasonably determined in good faith by the Company's board of directors (the "***Fair Market Value***") is in excess of the Additional Share Price, the Company shall issue to the Investor (i) a number of whole shares of Common Stock equal to (x) the number of Additional Unpurchased Shares as of immediately prior to the closing of a Change of Control, reduced by (y) that number of shares of Common Stock equal to the quotient obtained by dividing (A) the product of (1) the Additional Share Price multiplied by (2) the Additional Unpurchased Shares as of immediately

prior to the closing of a Change of Control by (B) the Fair Market Value, and (ii) cash in lieu of any fractional shares (based on the Fair Market Value).

3.2. **Exercise Notice**. The term "***Exercise Notice***" shall mean an irrevocable written notice specifying a closing date for the purchase of Additional Shares pursuant to Section 3.1 (an "***Additional Closing***"), which notice shall be delivered at least five (5) Business Days prior to the date of the applicable Additional Closing. The date on which an Additional Closing occurs is hereinafter referred to as an "***Additional Closing Date***".

3.3. **Additional Closing**. At an Additional Closing (or one or more Additional Closings if permitted by Section 3.1(b)), which shall take place on the date specified in the applicable Exercise Notice, (a) the Company shall (i) deliver the Investor a certificate (an "***Additional Closing Certificate***"), dated as of the Additional Closing Date, executed by a duly authorized officer of the Company, certifying that the Additional Closing Representations are true and correct on the Additional Closing Date, (ii) deliver, or cause to be delivered, to the Investor the Additional Shares to be purchased at such Additional Closing in book-entry form, and (iii) instruct the Transfer Agent to register such issuance at the time of such issuance, and (b) the Investor shall deliver to the Company an amount in cash equal to the product of (i) the number of Additional Shares to be purchased pursuant to such Exercise Notice (subject to Section 3.1(b)) and (ii) the Additional Share Price, by wire transfer of immediately available funds to a bank account designated in writing by the Company not less than two (2) Business Days before such Additional Closing Date. At or prior to an Additional Closing, the Company and the Investor shall execute any related agreements or other documents required to be executed hereunder or reasonably requested by the other party hereto.

3.4. **Beneficial Ownership Limitation**. Notwithstanding anything herein to the contrary, if at any time the shares of Common Stock beneficially owned by Investor and its Affiliates constitute in excess of the Threshold because the number of issued and outstanding shares of Common Stock or other Company Securities is reduced by any action taken by or on behalf of the Company, including as a result of a Stock Event, the Investor and its Affiliates shall not be required to dispose of any of their holdings of Company Securities.

3.5. **Subsequent Equity Sales**.

(a) Except as required pursuant to this Agreement, from the date hereof until ninety (90) days after the Closing Date, without the consent of the Investor, the Company shall not issue any Company Securities. Notwithstanding the foregoing sentence, the provisions of this Section 3.5(a) shall not apply to (i) the issuance of the Shares or Additional Shares hereunder, (ii) the issuance of shares of Common Stock upon the conversion or exercise of any Company Securities outstanding on the date hereof or outstanding pursuant to clause (iii) or (iv) of this paragraph, (iii) the issuance of any Company Securities pursuant to the Company Equity Plans, or (iv) the filing of a registration statement under the Securities Act to register the offer and sale of securities on a newly adopted stock-based compensation plan or (v) the issuance of up to 2,000,000 shares of Common Stock for a price per share that is equal to or greater than $10.00 per share (or otherwise consented to by the Investor) to one or more institutional investors in a private placement or public offering (each of clauses (i), (ii) (iii), (iv) and (v), a "***Permitted Issuance***").

(b) The Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that will be integrated with the offer or sale of the Shares or Additional Shares in a manner that would require the registration under the Securities Act of the sale of the Shares or Additional Shares to the Investor, or that will be integrated with the offer or sale of the Shares or Additional Shares for purposes of the rules and regulations of any trading market such that it would require stockholder approval prior to the Closing or an Additional Closing, as applicable, unless stockholder approval is obtained before the closing of such subsequent transaction.

4. **Representations and Warranties of the Company**. Except as disclosed in the Applicable SEC Documents that are publicly available at least one (1) Business Day prior to the date of this Agreement or, solely for purposes of any Additional Closing Certificate, that are publicly available at least one (1) Business Day prior to the date of the applicable Exercise Notice (collectively, the "***SEC Reports***") (excluding any disclosures in the SEC Reports under the headings "Risk Factors" and "Forward-Looking Statements" and any other disclosures of risks explicitly included in any "forward-looking statements" disclaimer and any other disclosures included therein to the extent they are predictive and forward-looking in nature, in each case other than specific factual information contained therein), it being understood that any matter disclosed in the SEC Reports shall not be deemed disclosed for purposes of Sections 4.1, 4.2, 4.3, 4.4 and 4.5, the Company hereby represents and warrants, as of the date hereof and as of the Closing Date, to the Investor as follows:

4.1. **Organization and Standing**. Arcturus-Israel is an Israeli incorporated company, duly organized, validly existing and in good standing under the Laws of Israel, and Arcturus-Delaware is a Delaware corporation, duly organized, validly existing and in good standing under the Laws of the State of Delaware. The Company has full corporate power and authority to own, lease and operate its properties and conduct its business as presently conducted and intended to be conducted, as set forth in the SEC Reports, and is duly qualified or licensed as a foreign corporation to do business, and is in good standing, in all jurisdictions in which the character of the property owned, leased or operated by it or the nature of the business transacted by it makes qualification or licensing necessary, except where the failure to be so qualified or licensed has not had and could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect.

4.2. **Corporate Power; Authorization; No Conflict**.

(a) The Company has all requisite corporate power and authority, and has taken all requisite corporate action, to execute and deliver this Agreement and the Registration Rights Agreement, to consummate the transactions contemplated hereby and thereby and to perform all of its obligations hereunder and thereunder. Each of this Agreement and the Registration Rights Agreement has been duly and validly executed and delivered by the Company and constitutes the legal, valid and binding obligation of the Company, enforceable in accordance with its terms, except (i) as may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws relating to or affecting the enforcement of creditors' rights generally, and (ii) as limited by equitable remedies, including any specific performance (the "***Equitable Exceptions***").

(b) The execution and delivery of this Agreement and the Registration Rights Agreement does not, and the performance of this Agreement and the Registration Rights Agreement, the compliance with the provisions hereof and thereof, and the consummation of the transactions contemplated hereby and thereby will not, conflict with, or result in a breach, loss of right under or violation of the terms, conditions or provisions of, or constitute a default (or an event which, with notice or lapse of time or both, would become a default) under, or give to others any right of termination, amendment, acceleration or cancellation of, or result in the creation or imposition of any Lien pursuant to, (i) the Organizational Documents of the Company or any of its Subsidiaries, (ii) any Law (including the rules and regulations of The Nasdaq Global Market ("***Nasdaq***"), including Rule 5635) or Permit applicable to the Company or any of its Subsidiaries or by which any properties of the Company or its Subsidiaries is bound or affected, or (iii) the terms of any indenture, deed of trust, note, mortgage, lease or other agreement or instrument to which the Company or any of its Subsidiaries is a party or bound or to which any of their respective properties is subject. No approval of the shareholders of the Company or other corporate proceeding or Third Party approval or consent is required to authorize this Agreement or the Registration Rights Agreement, or for the Company to consummate the transactions contemplated hereby, including to issue and deliver to the Investor the Shares, or thereby.

4.3. **Organizational Documents**. The Organizational Documents that are on file with the Commission are current, complete and correct copies thereof as in effect on the date hereof. The Organizational Documents are in full force and effect. The Company is not in violation of any provisions of its Organizational Documents.

4.4. **Issuance and Delivery of the Shares**. The Shares and Additional Shares have been duly authorized and, when issued and paid for in compliance with the provisions of this Agreement, will be validly issued, fully paid and nonassessable and free and clear of any and all Liens. The issuance and delivery of the Shares and the Additional Shares is not subject to preemptive, co-sale, right of first refusal or any other similar rights of the shareholders of the Company.

4.5. **Capitalization**.

(a) The authorized share capital of the Company consists of 30,000,000 shares of Common Stock, and 10,000,000 shares of preferred stock, par value $0.001 per share ("***Preferred Stock***"). As of the date hereof, (i) 10,718,844 shares of Common Stock are issued and outstanding, all of which are duly authorized, validly issued, fully paid and nonassessable and were issued free of preemptive (or similar) rights, (ii) no shares of Common Stock are owned by the Company or its Subsidiaries, (iii) 1,436,933 shares of Common Stock are issuable upon the exercise of outstanding stock options or upon the settlement of outstanding equity awards issued pursuant to the Company Equity Plans, (iv) 1,163,067 shares of Common Stock are reserved for future issuance in connection with the Company Equity Plans and (v) no shares of Preferred Stock are outstanding. Except as set forth in this Section 4.5 and except for the Shares and Additional Shares to be issued pursuant to this Agreement, there are no (x) shares or

other equity interests of the Company or securities of the Company convertible into or exchangeable for shares or other equity interests of the Company, (y) options, warrants, calls, preemptive (or similar) rights, subscriptions, conversion rights, stock appreciation rights, performance units, phantom stock rights, profit participation rights or (z) other rights, agreements, arrangements or commitments of any character relating to the issued or unissued share capital of the Company or obligating the Company to issue, transfer or sell, or cause to be issued, transferred or sold, any shares of share capital, or other equity interests in, the Company or any securities convertible into or exchangeable for such shares or other equity interests of the Company, including any rights, agreements, arrangements or commitments related to any "at the market offering," as defined in the Securities Act, (the items described in clauses (x), (y) and (z), collectively, "***Company Securities***"), and there are no outstanding contractual obligations of the Company or any of its Subsidiaries to repurchase, redeem or otherwise acquire, or prepare and file with the Commission any registration statement to register under the Securities Act with respect to, any such shares of share capital or other equity interests, or to provide funds to, make any investment (in the form of a loan, capital contribution or otherwise) in, return capital to, or make any payment to, any Person. There exist no preemptive (contractual, statutory or otherwise), or other similar rights to purchase securities of the Company.

(b) There are no bonds, debentures, notes or other indebtedness of the Company or any of its Subsidiaries having the right to vote (or convertible into or exercisable for securities having the right to vote) on any matters related to the Company or any of its Subsidiaries, or on which equityholders of the Company or any of its Subsidiaries may vote, issued or outstanding. None of the Company or any of its Subsidiaries is a party to any stockholders' agreement, voting trust agreement or registration rights agreement relating to any equity securities of the Company or any of its Subsidiaries or any other contract relating to disposition, voting or dividends with respect to any Company Securities or any securities of any Subsidiaries of the Company.

(c) All issued and outstanding shares of Common Stock are entitled to one (1) vote per share on each matter properly submitted to the stockholders of the Company for their vote.

4.6. **Subsidiaries**. The Company does not own or control, directly or indirectly, any Person other than the Subsidiaries listed in the SEC Reports. The Company owns, directly or indirectly, all of the capital stock or other equity interests of each Subsidiary listed in the SEC Reports free and clear of any and all Liens, and all the issued and outstanding shares or other equity interest of each such Subsidiary are duly authorized, validly issued, fully paid and non-assessable and were issued free of preemptive (or similar) rights. Except as set forth in the SEC Reports, neither the Company nor any of its Subsidiaries owns, directly or indirectly, any equity interest in any other Person.

4.7. **SEC Documents; Financial Statements**.

(a) Each of Arcturus-Israel and Arcturus-Delaware has filed in a timely manner all reports, schedules, forms, exhibits, statements and other documents that such entity

was required to file with the Commission under Sections 13, 14(a) and 15(d) of the Exchange Act or otherwise under the Securities Act or the Exchange Act, since January 1, 2016 (such documents, the "***Applicable SEC Documents***"). As of their respective filing dates (or, if amended prior to the date of this Agreement, when amended), the Applicable SEC Documents complied in all material respects with the requirements of the Exchange Act and the rules and regulations of the Commission promulgated thereunder. None of the Applicable SEC Documents as of their respective dates (and as of the dates filed, mailed or declared effective) contained any untrue statement of material fact or omitted to state a material fact required to be stated therein or necessary to make the statements made therein, in light of the circumstances under which they were made, not misleading. The financial statements of the Company included in the Applicable SEC Documents (the "***Financial Statements***") comply in all material respects with applicable accounting requirements and with the rules and regulations of the Commission with respect thereto. The Financial Statements have been prepared in accordance with GAAP, consistently applied, and fairly present the consolidated financial position, results of operations and cash flows of the Company and its Subsidiaries as at the respective dates thereof and for the respective periods then ended (subject, in the case of unaudited statements, to normal and recurring year-end adjustments, none of which are expected to be material to the Company and its Subsidiaries, taken as a whole). As of the date of this Agreement, there are no unresolved comments in comment letters received from the Commission or its staff. None of the Company's Subsidiaries is subject to the reporting requirements of the Exchange Act.

(b) The Company and its Subsidiaries maintain a system of internal controls over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) 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 GAAP and to maintain asset accountability; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. The Company's internal controls over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) are effective to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Neither the Company nor, to the knowledge of the Company, the Company's independent registered public accounting firm has identified or been made aware of (x) any "significant deficiency" or "material weakness" (each as defined in Rule 13a-15(f) of the Exchange Act) in the system of internal control over financial reporting utilized by the Company and its Subsidiaries that has not been subsequently remediated; or (y) any fraud that involves the Company's management or other employees who have a significant role in the preparation of financial statements or the internal control over financial reporting utilized by the Company and its Subsidiaries, and the Company's principal executive officer and its principal financial officer have disclosed, based on their evaluation of internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f)

and 15(d)-15(f)), to the Company's auditors and the audit committee of the Company's board of directors any instances of "significant deficiencies," "material weaknesses" or fraud referred to in clauses (x) and (y). The Company maintains "disclosure controls and procedures" (as such term is defined in Rule 13a-15(e) under the Exchange Act); such disclosure controls and procedures are effective.

(c) There is and has been no failure on the part of the Company and any of the Company's directors or officers, in their capacities as such, to comply with any applicable provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith, including Section 402 relating to loans and Sections 302 and 906 related to certifications.

4.8. **Material Changes; Undisclosed Events, Liabilities or Developments**. Since December 31, 2018, except as specifically set forth in a subsequent publicly available SEC Report: (a) there has been no Effect that has had or could reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, (b) the Company has not incurred any liabilities or obligations (contingent or otherwise) other than liabilities not required to be reflected in the Company's financial statements pursuant to GAAP or disclosed in the SEC Reports or liabilities and obligations incurred in the ordinary course of business consistent with past practice since the date of the most recent consolidated balance sheet of the Company and its Subsidiaries included in the SEC Reports publicly available prior to the date hereof, (c) the Company has not altered its method of accounting or the manner in which it keeps its accounting books and records, (d) the Company has not declared or made any dividend or distribution of cash or other property or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock, and (e) the Company has not sold, exchanged or otherwise disposed of any material assets or rights. The Company does not have pending before the SEC any request for confidential treatment of information. The Company and its Subsidiaries, individually and on a consolidated basis, are not, as of the date of this Agreement and after giving effect to the transactions contemplated hereby, insolvent.

4.9. **Nasdaq Compliance**. The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and listed on Nasdaq, and the Company has taken no action designed to terminate, or which to its knowledge is likely to have the effect of terminating, the registration of its Common Stock under the Exchange Act or delisting its Common Stock from Nasdaq. The Company is in compliance with applicable Nasdaq continued listing requirements. There are no proceedings pending or, to the Company's knowledge, threatened against the Company relating to the continued listing of the Common Stock on Nasdaq, and the Company has not received any notice of, nor, to the Company's knowledge, is there any reasonable basis for, the delisting of the Common Stock from Nasdaq.

4.10. **Governmental Consents**. No consent, approval, qualification, order, permit or authorization of, or filing with or notification to, any Governmental Authority is required on the part of the Company or, in the case of the Amendment, Arcturus in connection with the Company's or, in the case of the Amendment, Arcturus's valid execution, delivery, or performance of this Agreement, the Registration Rights Agreement or the Amendment, or the consummation of the transaction contemplated hereby, including the offer, sale or issuance of the Shares and the Additional Shares by the Company, or thereby, other applicable filings with Nasdaq, under the

Securities Act or the Exchange Act, in each case, which will be timely filed within the applicable periods therefor.

4.11. **Employees and Employee Matters**. The Company has complied in all material respects with all federal, state and local laws relating to the hiring of employees, consultants and advisors and the employment of labor, including provisions thereof relating to wages, hours, equal opportunity, discrimination, sexual harassment, disability rights or benefits, collective dismissals, plant closures, affirmative action, workers' compensation, severance or other termination-related payments, worker classification, labor relations, occupational safety and health requirements, unemployment insurance, collective bargaining and the payment of social security and other taxes. The Company is not delinquent in material payments to any of its employees for any wages, salaries, commissions, bonuses or other direct compensation for any services performed by them to date or amounts required to be reimbursed to such employees or upon any termination of the employment of any such employees.

4.12. **Material Contracts**. Except as disclosed in the SEC Reports, neither the Company nor any of its assets, properties, businesses or operations is a party to, bound or affected by, or receives benefits under any contract which is a "material contract" (as such term is defined in Item 601(b)(10) of Regulation S-K of the SEC) (a "***Material Contract***"). Except as has not had and could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, (a) each Material Contract is valid and binding on the Company and, to the Company's knowledge, each other party thereto, and in full force and effect, (b) each Material Contract is enforceable against the Company and, to the Company's knowledge, the other parties thereto in accordance with the terms thereof, except as such enforceability may be limited by the Equitable Exceptions, (c) none of the Company, any of its Subsidiaries or, to the Company's knowledge, any other party is in material breach or material violation of, or material default under, any Material Contract and no event has occurred which, with notice or the lapse of time or both, would constitute such a material breach, material violation or material default and (d) neither the Company nor any of its Subsidiaries has received written notice of a claim that it is in material breach or material violation of, or material default under, any Material Contract (whether or not such material default or material violation has been waived). No party to any Material Contract (a) has cancelled or otherwise terminated such Material Contract prior to the expiration of the contract term or (b) to the knowledge of the Company, has threatened to terminate the applicable Material Contract.

4.13. **Litigation**. There is no material Action pending or, to the Company's knowledge, currently threatened against the Company, any of its Subsidiaries, any of their respective directors, officers or employees or any property, right or asset of the Company or any of its Subsidiaries. None of the Company, any of its Subsidiaries, or any property, right or asset of the Company or any of its Subsidiaries is a party to, or subject to the provisions of, any order writ, injunction, judgment, award, ruling or decree of, or settlement agreement with, any Governmental Authority. Neither the Company nor any of its Subsidiaries, nor, to the Company's knowledge, any of their respective directors or officers, is or has been the subject of any Action involving a claim of violation of or liability under securities Laws or a claim of breach of fiduciary duty. There has not been, and, to the Company's knowledge, there is not pending or contemplated, any investigation by the Commission involving the Company, any of its Subsidiaries or, to the Company's knowledge, any of their respective current or former directors or officers. The Commission has

not issued any stop order or other order suspending the effectiveness of any registration statement filed by the Company or any of its Subsidiaries under the Exchange Act or the Securities Act.

4.14. **Taxes**.

(a) Except as has not had and could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, (i) all U.S. federal, state and local and Israeli and other non-U.S. tax returns, reports and declarations of the Company and any Subsidiary required by Law to be filed have been duly filed and (ii) all taxes and other fees due and owing as required by Law have been paid. There is no tax Lien, whether imposed by any federal, state, county or local or Israeli or other non-U.S. taxing authority, outstanding against the assets, properties or business of the Company or any of its Subsidiaries.

(b) No U.S. federal, state, local or Israeli or other non-U.S. tax audits or administrative or judicial tax proceedings are pending or being conducted with respect to the Company or any of its Subsidiaries. Neither the Company nor any of its Subsidiaries has received from any U.S. federal state, local or Israeli or other non-U.S. taxing authorities any (i) notice indicating an intent to open and audit or other review, (ii) request for information related to tax matters, or (iii) notice of deficiency or proposed adjustment for any amount of tax proposed, asserted, or assessed by any taxing authority against the Company or any of its Subsidiaries.

(c) No claim has ever been made by any taxing authority in a jurisdiction where the Company or any of its Subsidiaries does not file tax returns that the Company or any of its Subsidiaries is or may be subject to taxation in that jurisdiction.

(d) Neither the Company nor any of its Subsidiaries has waived any stature of limitation in respect of taxes or agreed to any extension of time with respect to a tax assessment or deficiency.

(e) The Company and each of its Subsidiaries have withheld and paid all taxes required to have been withheld and paid in connection with any amounts paid or owing to any employee, independent contractor, creditor, stockholder, or other third party.

(f) Neither the Company nor any of its Subsidiaries will be required to include any items of income in, or exclude any items of deduction from, taxable income for any tax period after the Closing Date as a result of any (i) change in method of accounting for a taxable period ending on or prior to the Closing Date, (ii) “closing agreement” as described in Code Section 7121 (or any corresponding or similar provision of state, local, or non-U.S. income tax Law) executed prior to the Closing, (iii) intercompany transaction described in the Treasury Regulations promulgated under Code Section 1502 (or any corresponding or similar provision of state, local, or non-U.S. Law) occurring prior to the Closing Date, (iv) installment sale or open transaction disposition made prior to the Closing, (v) prepaid amount received prior to the Closing or (vi) election under Code Section 108(i).

(g) At all times since November 15, 2017, the Company has been treated as a U.S. corporation for U.S. federal income tax purposes pursuant to Code Section 7874.

(h) Neither the Company nor any of its Subsidiaries has been a party to any "reportable transaction" as defined in Code Section 6707A(c)(1).

4.15. **Affiliate Transactions**. No employee, officer, director or 5% or greater shareholder of the Company or member of his or her immediate family (each a "***Covered Person***") is currently indebted to the Company, nor is the Company indebted (or committed to make loans or extend or guarantee credit) to any Covered Person. Except as disclosed in the SEC Reports, no Covered Person has any direct or indirect ownership interest in any firm or corporation with which the Company is affiliated or with which the Company has a business relationship, or any firm or corporation that competes with the Company (except for ownership of stock not to exceed 1% of the outstanding capital stock of any publicly traded company that may compete with the Company).

4.16. **Title to Assets**. Except as set forth in the SEC Reports, the Company and its Subsidiaries have good and marketable title to all real property and personal property owned by the Company or its Subsidiaries that is material to the business of the Company and its Subsidiaries, taken as a whole, in each case free and clear of all Liens, except for Liens that do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company and its Subsidiaries and Liens for the payment of federal, state or other taxes, the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company or any of its Subsidiaries are held by them under valid, subsisting and enforceable leases with which the Company and its Subsidiaries are in compliance.

4.17. **Foreign Corrupt Practices**. None of the Company, its Subsidiaries or any director, officer, employee or agent of the Company or any of its Subsidiaries or, to the knowledge of the Company, any other Person acting on behalf of the Company or any of its Subsidiaries has: (a) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (b) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (c) failed to disclose fully any contribution made by the Company or any of its Subsidiaries (or made by any Person acting on its behalf of which the Company is aware) which is in violation of Law or (d) violated any provision of the Foreign Corrupt Practices Act of 1977, as amended, or any applicable anti-bribery Law.

4.18. **Office of Foreign Assets Control**. None of the Company, its Subsidiaries or any director, officer, employee or agent of the Company or any of its Subsidiaries or, to the knowledge of the Company, any other Person acting on behalf of the Company or any of its Subsidiaries, (a) is currently subject to any sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department ("***Sanctions***") or (ii) will, directly or indirectly, use the proceeds of this offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other Person in any manner that will result in a violation of any Sanctions by, or could result in the imposition of Sanctions against, any Person, or (b) is a Person that is, or is 50% or more owned or otherwise controlled by a Person that is: (i) the subject of any Sanctions;

or (ii) located, organized or resident in a country or territory that is, or whose government is, the subject of Sanctions.

4.19. **Money Laundering**. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder 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 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.

4.20. **Offering Exemption**. Assuming the accuracy of the representations made by the Investor in Section 5.2, the offer and issuance by the Company of the Shares and the Additional Shares is exempt from registration under the Securities Act and all applicable state and foreign registration or qualification requirements.

4.21. **Compliance with Rule 506**. None of the Company, any of its predecessors, any affiliated issuer, any director, executive officer, other officer of the Company participating in the offering contemplated hereby, any beneficial owner of 20% or more of the Company's outstanding voting equity securities, calculated on the basis of voting power, any promoter (as that term is defined in Rule 405 under the Securities Act) connected with the Company in any capacity at the time of sale nor any other Person specified in Rule 506(d)(1) under the Securities Act is disqualified from relying on Rule 506 of Regulation D under the Securities Act ("***Rule 506***") for any of the reasons stated in Rule 506(d) in connection with the issuance and sale of the Shares and the Additional Shares to the Investor pursuant to this Agreement. The Company has exercised reasonable care, including conducting a factual inquiry that is appropriate in light of the circumstances, into whether any such disqualification under Rule 506(d) exists, but has assumed the accuracy of the Investor's representations and warranties.

4.22. **No General Solicitation**. None of the Company, any of its Affiliates, or any Person acting on its or their behalf, has engaged in any form of general solicitation or general advertising (within the meaning of Regulation D promulgated under the Securities Act) in connection with the offer or sale of the Shares or Additional Shares.

4.23. **No Integrated Offering**. None of the Company, any of its Affiliates, or any Person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy, or otherwise negotiated in respect of, any security, under circumstances that would adversely affect reliance by the Company on Section 4(a)(2) of the Securities Act or require registration of any of the Shares or Additional Shares under the Securities Act or cause this offering of the Shares or Additional Shares to be integrated with other offerings by the Company (including those contemplated by Section 3.5) for purposes of the Securities Act or any applicable stockholder approval provisions, including under the rules and regulations of Nasdaq.

4.24. **Intellectual Property; Trials**.

(a) The Company owns or possesses all (i) patents, patent applications, trademarks, trademark registrations, service marks, service mark registrations, Internet domain name registrations, copyrights, copyright registrations, licenses and trade secret rights (collectively, "***Intellectual Property Rights***") and (ii) inventions, software, works of authorships, trademarks, service marks, trade names, databases, formulae, know how, Internet domain names and other intellectual property (including trade secrets and other unpatented and/or unpatentable proprietary confidential information, systems, or procedures) (collectively, "***Intellectual Property Assets***") necessary to conduct its business as currently conducted, and as proposed to be conducted and described in the Applicable SEC Documents. The Company has not received any opinion from its legal counsel concluding that any activities of its business infringes, misappropriates, or otherwise violates, valid and enforceable Intellectual Property Rights of any other person, and has not received written notice of any challenge, which is, to its knowledge, still pending, by any other Person to the rights of the Company or its Subsidiaries with respect to any Intellectual Property Rights or Intellectual Property Assets owned or used by the Company and its Subsidiaries. The Company and its Subsidiaries have complied in all material respects with, and are not in breach of, nor have they received any asserted or threatened written claim of breach of any intellectual property licenses for the use of the Intellectual Property Rights, and the Company has no knowledge of any breach or intended breach by any Person of any such intellectual property licenses. No claim has been made in writing or is pending against the Company or any of its Subsidiaries alleging the infringement by the Company or any of its Subsidiaries of any patent, trademark, service mark, trade name, copyright, trade secret, license in or other intellectual property right or franchise right of any Person.

(b) The studies, tests and preclinical or clinical trials conducted by or on behalf of the Company or any of its Subsidiaries (the "***Company Studies and Trials***") were and, if still pending, are being conducted in all material respects in accordance with experimental protocols, procedures and controls pursuant to, where applicable, accepted professional scientific standards; the descriptions of the results of the Company Studies and Trials contained in the Applicable SEC Documents are accurate in all material respects. The Company has not received any notices or correspondence from the United States Food and Drug Administration or any Governmental Authority exercising comparable authority requiring the termination, suspension or material modification of any Company Studies and Trials, except for any such termination, suspension or material modification that has not had and could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect and, to the Company's knowledge, there are no reasonable grounds for the same.

4.25. **Insurance**. The Company and each of its Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are reasonable and customary in the business in which it is engaged. All policies of insurance and fidelity or surety bonds insuring the Company and each of its Subsidiaries or their respective businesses, assets, employees, officers and directors are in full force and effect. The Company has no reason to believe that it and each of its Subsidiaries will not be able to renew its existing

insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not be significant.

4.26. **Compliance with Laws; Permits**. (a) Except as has not had and could not reasonably be excepted to have, individually or in the aggregate, a Material Adverse Effect, (i) the Company and its Subsidiaries, since January 1, 2017, have conducted and are conducting their businesses in compliance with all Laws (including all Environmental Laws) applicable to the Company, any of its Subsidiaries or any of their assets, (ii) neither the Company nor any of its Subsidiaries has received any notification or communication from any Governmental Authority of any alleged, potential or actual violation by the Company or any of its Subsidiaries of any Law and (iii) the Redomiciliation complied with all applicable Laws. The Company is not a "potentially responsible party" under any Environmental Laws.

(b) The Company and its board of directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company's Organizational Documents or the Laws of its state of incorporation that is or could become applicable to the Investor as a result of the Investor and the Company performing their obligations or exercising their rights under this Agreement.

(c) The Company and each of its Subsidiaries possess all licenses, certificates, consents, approvals, permits and other authorizations issued by all applicable authorities necessary to conduct their respective businesses (collectively, "***Permits***"), and neither the Company nor any of its Subsidiaries is or has been in conflict with, or in default, breach or violation of, any Permit or has received any notice of proceedings relating to the revocation or modification of any such Permit which, if the subject of an unfavorable decision, ruling or finding, could reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect.

4.27. **Approval of Transaction**. The Company's board of directors has approved the transactions contemplated by this Agreement, including the issuance of the Shares and the Additional Shares to the Investor (including for purposes of Section 203 of the Delaware General Corporation Law and Rule 16(b)(3) of the Exchange Act).

4.28. **Investment Company**. The Company is not and, after giving effect to the offering and sale of the Shares and Additional Shares, will not be an "investment company" as defined in the Investment Company Act of 1940, as amended.

4.29. **Disclosure**. The Company understands and confirms that the Investor will rely on the foregoing representations in effecting transactions in securities of the Company. To the knowledge of the executive officers of the Company, all due diligence materials regarding the Company and its Subsidiaries, their businesses and the transactions contemplated hereby, furnished by or on behalf of the Company to the Investor upon its request are, when taken together with the SEC Reports, true and correct in all material respects and do not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in light of the circumstances under which they were made, not misleading.

4.30. **Brokers or Finders**. The Company has not retained any brokers, consultants, finders, investment bankers or advisors in connection with this Agreement or the transactions contemplated hereby, and has no agreements to pay any commission or compensation in the nature of a finder's, broker's or other fee arising out of this Agreement or the transactions contemplated hereby.

5. **Representations and Warranties of the Investor**. The Investor hereby represents and warrants, as of the date hereof and as of the Closing Date, to the Company as follows:

5.1. **Authorization; Enforceability**. The Investor has all requisite corporate power and authority, and has taken all requisite corporate action, to execute and deliver this Agreement, the Registration Rights Agreement and the Amendment, to consummate the transactions contemplated hereby and thereby and to perform all of its obligations hereunder and thereunder. Upon the execution and delivery of this Agreement and the Registration Rights Agreement by the Investor, each of this Agreement and the Registration Rights Agreement shall constitute a valid and binding obligation of the Investor, enforceable in accordance with its terms, except as may be limited by the Equitable Exceptions.

5.2. **Investment Representations**.

(a) The Investor has such knowledge and experience in financial and business matters that the Investor is capable of evaluating the merits and risks of the Investor's prospective investment in the Company and has the ability to bear the economic risks of the investment contemplated hereby.

(b) Investor is acquiring the Shares and the Additional Shares for investment for the Investor's own account and not with the present view to, or for present resale in connection with, any distribution thereof in violation of the Securities Act (without prejudice, however, to the Investor's rights to sell or otherwise distribute the Shares and Additional Shares in compliance with this Agreement). The Investor understands that the Shares and the Additional Shares have not been registered under the Securities Act by reason of a specific exemption from the registration provisions of the Securities Act. The Investor further represents that it does not, as of the date of this Agreement, have any contract, undertaking, agreement or arrangement with any Person to sell, transfer or grant participation to any third Person with respect to any of the Shares or the Additional Shares.

(c) The Investor acknowledges that the Shares and the Additional Shares may only be sold if subsequently registered under the Securities Act or an exemption from such registration is available. The Investor is aware of the provisions of Rule 144 that permit limited resale of shares purchased in a private placement subject to the satisfaction of certain conditions.

(d) The Investor has received and reviewed information about the Company and has had an opportunity to discuss the Company's business, management and financial affairs with its management and to review the Company's facilities. The Investor has had an opportunity to ask questions of and receive answers from the Company, or any

Person or Persons acting on behalf of the Company, concerning the terms and conditions of an investment in the Shares and the Additional Shares.

(e) The Investor acknowledges that it is an "accredited investor" as defined in Rule 501(a) of Regulation D of the Securities Act.

(f) The Investor was not induced to participate in the offer and sale of the Shares and the Additional Shares by the filing of any registration statement in connection with any public offering of the Company's securities (other than pursuant to the Registration Rights Agreement).

5.3. **Brokers**. There are no brokers, finders or financial advisory fees or commissions that will be payable by the Investor in respect of the transactions contemplated by this Agreement.

5.4. **Legends**. The Investor understands that, until such time as the Shares or the Additional Shares have been sold pursuant to the Registration Statement (as such term is defined in the Registration Rights Agreement) or the Shares or the Additional Shares may be sold pursuant to Rule 144 without any restriction as to the number of securities as of a particular date that can then be immediately sold, the book entry notations evidencing the Shares and the Additional Shares may bear one or more legends in substantially the following form and substance:

"THE SECURITIES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), OR UNDER THE SECURITIES LAWS OF CERTAIN STATES. THESE SECURITIES ARE SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE AND MAY NOT BE TRANSFERRED OR RESOLD EXCEPT (1) AS PERMITTED UNDER THE ACT AND ANY APPLICABLE STATE SECURITIES LAWS, PURSUANT TO REGISTRATION OR EXEMPTION THEREFROM, (2) UNLESS THE COMPANY HAS RECEIVED AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY AND ITS COUNSEL THAT SUCH REGISTRATION IS NOT REQUIRED OR (3) UNLESS SOLD PURSUANT TO RULE 144 OF THE ACT OR OTHER EXEMPTION FROM REGISTRATION."

6. Covenants.

6.1. **Standstill**. Subject to Section 6.3, the Investor hereby agrees that, without the prior approval of the Company, the Investor shall not, and shall not permit any controlled Affiliate to, (except as contemplated by this Agreement or as approved or invited by the Company):

(a) acting alone or with others, acquire, offer to acquire, or agree to acquire, directly or indirectly, by purchase, merger, business combination or in any other manner, any voting equity securities of the Company if, after such acquisition, the Investor, together with its controlled Affiliates, would own more than the Threshold; provided that any investment by the Investor or an Affiliate of the Investor, or any of their respective pension or employee benefit plans, in third-party mutual funds or other similar passive investment vehicles that hold interests in securities of the Company or any of its Affiliates shall not be taken into account for the purpose of this subparagraph (a) or otherwise prohibited by this Section 6.1 (provided that, neither

the Investor nor any of its controlled Affiliates shall request or direct that the trustee or other administrator of any such plans, funds or other similar passive investment vehicles acquire equity securities of the Company);

(b) engage in any "solicitation" of "proxies" (as such terms are used in the rules promulgated by the Commission) to vote any voting equity securities of the Company, or seek to advise or influence any Person with respect to the voting of any voting equity securities of the Company (other than in connection with the election of the Investor Designee);

(c) form, join or in any way participate in a "group" as defined in Section 13(d)(3) (a "***13D Group***") of the Exchange Act, in connection with any of the foregoing clauses (a) and (b) (other than a 13D Group that includes only the Investor and its Affiliates or that relates to the Investor Designee);

(d) publicly disclose any intention, plan or arrangement inconsistent with the foregoing clauses (a) through (c); or

(e) enter into any agreement or any arrangement with any other Person in connection with intentionally facilitating any transaction that is restricted by clauses (a) through (c);

provided that, notwithstanding anything in this Agreement to the contrary, (x) the Investor and its Affiliates shall not be prohibited or restricted from making (i) any confidential offers or proposals to the Company's board of directors or engaging in negotiation or discussions with the Company with respect thereto or (ii) any confidential request for the Company or its board of directors to waive, amend or provide a release of any provision of this Section 6.1 (whether or not in connection with such offer or proposal), (y) the Investor and its Affiliates may vote their shares of Common Stock in any manner they wish and (z) the provisions of this Section 6.1 shall not, and are not intended to, (i) restrict the manner in which any Investor Designee may (A) vote on any matter submitted to the Company's board of directors, (B) participate in deliberations or discussions of the Company's board of directors (including making suggestions or raising issues to the Company's board of directors) in his or her capacity as a member of the Company's board of directors, or (C) take actions required by his or her exercise of legal duties and obligations as a member of the Company's board of directors or refrain from taking any action prohibited by his or her legal duties and obligations as a member of the Company's board of directors, (ii) prohibit or restrict the Investor or its Affiliates from responding to any inquiries from any stockholders of the Company as to such Person's intention with respect to the voting or the tendering of its Common Stock, (iii) restrict the Investor or its Affiliates from taking any action they deem necessary to cause the Investor Designee to be elected to the Company's board of directors or any committee thereof or causing or effecting the issuance and acquisition of the Additional Shares, (iv) prohibit the Investor or its Affiliates from acquiring Company Securities issued by way of a Stock Event or which are issued to its directors, (v) prohibit the Investor or its Affiliates from selling their shares of Common Stock or (vi) prohibit the Investor or its Affiliates from complying with applicable Law.

6.2. **Transfer Restrictions**. Subject to Section 6.3, the Investor shall not, directly or indirectly, sell, transfer, pledge, 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, transfer the economic risk of ownership of, or otherwise dispose of (each, a "***Transfer***") any of the Shares or Additional Shares, except:

(a) to the Company;

(b) in response to a tender offer or exchange offer subject to Regulation 14D or Rule 13e-3 of the rules promulgated under the Exchange Act by the Commission, for cash, securities or other consideration;

(c) in connection with a Change of Control of the Company;

(d) to comply with the terms of this Agreement; or

(e) to an Affiliate of Investor in one or more transactions, so long as prior to or concurrent with any such Transfer such Affiliate agrees in writing to be bound by the terms of this Agreement;

provided that, for the avoidance of doubt, nothing in this Section 6.2 will restrict any Transfer of Shares or Additional Shares that may occur (or be deemed to occur) in connection with a Change of Control of the Investor (replacing references to "Company" with "Investor" in the definition of "Change of Control").

6.3. **Termination of Standstill and Transfer Restrictions**.

(a) The restrictions set forth in Section 6.1 shall terminate upon the earliest to occur of the following:

(i) (v) the merger, consolidation or other business combination or transaction to which the Company or any of its Subsidiaries is a party (other than a transaction solely between the Company and one or more of its wholly-owned Subsidiaries); (w) an acquisition by any Person or 13D Group (other than a 13D Group of which Investor or any of its Affiliates is a member) of direct or indirect beneficial ownership of voting securities (or securities convertible into or exercisable or exchangeable for such voting securities) of the Company or any of its Subsidiaries representing 50% or more of the total number of votes which may be cast in the election of members of the Company's board of directors if all securities entitled to vote in the election of such directors are present and voted ("***Total Voting Power***") or 50% or more of the total number of voting securities (or securities convertible into or exercisable or exchangeable for such voting securities) of any of the Company's Subsidiaries; (x) a sale, lease, exchange, contribution or other transfer (in one transaction or a series of related transactions) of all or substantially all of the assets of the Company or its Subsidiaries; (y) a liquidation or dissolution of the Company or (z) individuals who constitute Continuing Directors ceasing for any reason to constitute at least a majority of the Company's board of directors (clauses (v) through (z), collectively, a "***Change of Control***");

(ii) the date on which the Common Stock ceases to be registered pursuant to Section 12 of the Exchange Act;

(iii) if, at any time that the Investor is entitled to appoint an Investor Designee, (A) such Investor Designee is not elected or appointed to the Company's board of directors (or any committee thereof that the Investor Designee is eligible to be a member of pursuant to this Agreement) within five (5) Business Days after such election or appointment is required under this Agreement, (B) such Investor Designee is removed from the Company's board of directors or any such committee (other than at the direction of the Investor) or (C) the Company otherwise breaches Section 6.7 in any material respect; or

(iv) the two (2) year anniversary of the Closing Date.

(b) The restrictions set forth in Section 6.2 shall terminate upon the earliest to occur of the following:

(i) a Change of Control;

(ii) the date on which the Common Stock ceases to be registered pursuant to Section 12 of the Exchange Act;

(iii) the termination of the Collaboration Agreement;

(iv) if, at any time that the Investor is entitled to appoint an Investor Designee, (A) such Investor Designee is not elected or appointed to the Company's board of directors (or any committee thereof that the Investor Designee is eligible to be a member of pursuant to this Agreement) within five (5) Business Days after such election or appointment is required under this Agreement, (B) such Investor Designee is removed from the Company's board of directors or any such committee (other than at the direction of the Investor) or (C) the Company otherwise breaches Section 6.7 in any material respect;

(v) the date on which the Investor beneficially owns less than eight percent (8%) of the Total Voting Power; or

(vi) with respect to the Shares purchased at the Closing, the earlier of (a) the second anniversary of the Closing Date or (b) the six-month anniversary of the Additional Closing Date, and, with respect to any Additional Shares, the six-month anniversary of the Additional Closing Date on which the Investor purchased such Additional Shares.

(c) The restrictions set forth in Section 6.1 and the restrictions set forth in Section 6.2 shall terminate and shall not apply to or otherwise restrict the Investor's or its Affiliates' actions in respect of the Company Securities if a Significant Event has occurred (whether by way of purchase, merger, consolidation, tender offer, exchange offer or otherwise). For purposes of this Section 6.3(c) a "***Significant Event***" shall mean any of the following not involving a violation of Section 6.1: (i) the public announcement of a proposal to acquire (and such proposal has not been publicly rejected by the Company's board of directors within two Business Days from the date of such public announcement), or the acquisition, by any Person or 13D Group of

beneficial ownership of voting securities of the Company or any of its Subsidiaries representing (A) 20% or more of the then outstanding Common Stock or Total Voting Power, (B) securities convertible into or exercisable or exchangeable for 20% or more of the outstanding Common Stock or Total Voting Power, (C) any options, warrants or other rights to acquire 20% or more of the outstanding Common Stock or Total Voting Power, (D) 20% or more of any securities of any Subsidiary of the Company or, (E) assets or groups of assets having a book value in excess of 20% of the total book value of the assets of the Company and its Subsidiaries, taken as a whole (each, a "***Controlling Stake***"); (ii) the commencement or public announcement of an intention to commence, by any Person or 13D Group, of a tender or exchange offer, to acquire voting securities of the Company which has not been publicly rejected (within two Business Days from the date of such commencement or public announcement) by the Company's board of directors, and which, if successful, would result in such Person or 13D Group owning, when combined with any other voting securities of the Company owned by such Person or 13D Group, a Controlling Stake; (iii) the entry into by the Company, or the public announcement by the Company of a determination to explore, enter into or commence or continue any discussions relating to, any merger, consolidation, sale or other business combination transaction, or an agreement therefor, pursuant to which the outstanding shares of capital stock of the Company would be converted into cash, other consideration or securities of another Person or 13D Group or 50% or more of the then outstanding shares of capital stock of the Company would be owned by Persons other than the then current holders of shares of capital stock of the Company, which would result in all or a substantial portion of the Company's or any of its Subsidiaries' assets being sold to any person or 13D Group or which could otherwise lead to a Change of Control; (iv) the submission of any bona fide offer by any Third Party for a Controlling Stake or Change of Control (and the Company's board of directors permits the Company to negotiate in respect of such Third Party offer), prompt notice of which shall be provided to the Investor (such notice not to be later than three (3) Business Days after such submission); or (v) the public announcement by the Company that it is reviewing or is engaged in a process related to its strategic alternatives.

6.4. **Certain Offerings**. At any time prior to termination of the restrictions set forth in both Section 6.1 (unless such restrictions terminate pursuant to Section 6.3(a)(ii) or Section 6.3(a)(iii), in which case such rights shall continue until Section 6.1 would otherwise have been terminated) and Section 6.2 (unless such restrictions terminate pursuant to Section 6.3(b)(ii), Section 6.3(b)(iii) or Section 6.3(b)(iv) , in which case such rights shall continue until Section 6.2 would otherwise have been terminated) if the Company proposes to issue additional shares of Common Stock or any other Company Securities (collectively, the "***Offered Securities***") in a (a) broadly marketed, underwritten, public offering of Offered Securities registered under the Securities Act other than a Permitted Issuance, or (b) private placement or registered offering other than a public offering described in clause (a) or a Permitted Issuance, the Company shall use its best efforts to provide the Investor the opportunity to purchase the Offered Securities (up to an amount of Offered Securities that results in beneficial ownership by the Investor and its Affiliates of the same percentage of the issued and outstanding shares of Common Stock (on a fully diluted basis) immediately after giving effect to such purchase that the Investor owned prior to such offering) on the same terms as the other investors in such offering.

6.5. **Indemnification of the Investor**.

(a) Subject to the provisions of this Section 6.5, the Company shall indemnify and hold the Investor, its Affiliates and their respective directors, officers, shareholders, members, partners, employees, agents, successors, assigns and each Person who controls the Investor (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees of such controlling Persons and its Affiliates (each, an "***Investor Party***") harmless for, from and against any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, interest, awards, penalties, amounts paid in settlements, court costs and reasonable attorneys' and consultant's fees and costs of investigation (collectively, "***Losses***") that any such Investor Party may suffer or incur as a result of, or arising out of, the Company's breach of its representations, warranties, covenants or obligations under this Agreement (unless such Loss is solely due to the breach of the Investor's representation set forth in Section 5.2), including, in the case of an Additional Closing, in respect of the certifications made on the Additional Closing Certificate as well as any Losses such Investor Party may suffer or incur as a result of, or arising out of, the Company's breach of its representations, warranties, covenants or obligations under this Agreement that were made on the Closing Date as such Losses relate to the Additional Shares. If any Action shall be brought against any Investor Party in respect of which indemnity may be sought pursuant to this Agreement, such Investor Party shall reasonably promptly notify the Company in writing; provided that the failure to so notify the Company shall not affect the Investor Party's right to indemnification except to the extent the Company is materially prejudiced thereby.

(b) In no event will the Company's liability under this Section 6.5 exceed an aggregate of $10,000,000 in connection with any claim based on a breach of any representations and warranties contained in this Agreement; provided that, notwithstanding the foregoing, with respect to any claim based on a breach of any Company Fundamental Representations, in no event will the Company's liability under this Section 6.5 exceed the purchase price for Shares and Additional Shares paid by the Investor.

6.6. **Listing of Common Stock**. The Company hereby agrees to use its best efforts to (a) maintain the listing and trading of the Common Stock on Nasdaq, and (b) comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of Nasdaq.

6.7. **Board Nomination Right**.

(a) Until the later of (x) the first anniversary of the Closing Date or (y) the date on which the Investor beneficially owns less than eight percent (8.0%) of the Total Voting Power (excluding any derivative securities exercisable for the Company's capital stock which have not been exercised), (i) at each annual meeting of the stockholders of the Company or at any meeting of the stockholders of the Company at which members of the board of directors are to be elected, or whenever such action is to be taken by written consent for such purposes, the Company agrees to nominate for

election one individual designated by the Investor who shall be reasonably acceptable to the Company (an "***Investor Designee***"), and (ii) the Investor shall have the right to appoint the chief executive officer of the Investor as a non-voting observer to the Company's board of directors (the "***Investor Observer***"). The Investor's initial Investor Designee under this Agreement shall be Karah Parschauer (the "***Initial Designee***"). On or prior to the Closing Date, the Company shall take all actions necessary to cause the appointment to the Company's board of directors of the Initial Designee effective as of the Closing Date, and thereafter, for so long as the Investor's board nomination right under this Section 6.7 continues, the Company will use its best efforts to cause the election and reelection of such individual to the Company's board of directors for so long as he or she is an Investor Designee (including recommending that the Company's stockholders vote in favor of the election of such an individual, soliciting proxies and contesting any proxy contest and otherwise supporting him for election in a manner no less rigorous and favorable than the manner in which the Company supports its other nominees); provided that if the Investor determines to designate a different individual ("***Replacement Designee***") as its Investor Designee, such obligation shall instead apply to the Replacement Designee. If the Investor Designee vacates the board of directors, the Company shall take all actions necessary to cause the appointment to its board of directors of a Replacement Designee nominated by the Investor to fill the vacancy and thereafter the Company will use its best efforts to cause the election of such an individual to the Company's board of directors, subject to the same conditions and limitations as set forth in the foregoing sentence. The Investor Designee shall be entitled to the same level of directors' and officers' indemnity insurance coverage and indemnity and exculpation protection (including under any indemnification agreement) as the other members of the Company's board of directors. The Company shall enter into a customary indemnification agreement for the benefit of the Investor Designee and the Investor Observer. For so long as an Investor Designee serves on the Company's board of directors, the Company shall maintain in place directors' and officers' indemnity insurance coverage in an amount deemed appropriate by the Company's board of directors. The Investor Designee and the Investor Observer will be required to enter into a customary non-disclosure agreement that each director of the Company is required to enter into as of the date of this Agreement, on terms and conditions reasonably acceptable to the Investor; provided that, for the avoidance of doubt, such non-disclosure agreement shall not impose any other restrictive covenants and shall not restrict the Investor Designee from disclosing information to the Investor or the Investor's ability to use such information in connection with transactions involving or relating to the Company.

(b) If the Investor Designee included in the slate of nominees recommended by the Company's board of directors for election at a meeting of the stockholders of the Company is not elected to be a director at such meeting, the Company shall promptly increase the size of its board of directors and take such other action as is necessary to appoint the Investor Designee to the Company's board of directors.

(c) For so long as the Investor is entitled to designate at least one Investor Designee for election to the Company's board of directors under this Agreement, each committee

of the Company's board of directors shall include the Investor Designee other than any *bona fide* special committee solely formed to evaluate any existing or contemplated change in control transaction (a "***Special Committee***"); provided, however, that if the Investor Designee is not eligible for membership on any given committee of the Company's board of directors (other than a Special Committee) under then applicable listing and corporate governance standards of Nasdaq or any other applicable Law, then such committee shall include the Investor Designee only when so permitted by the listing and corporate governance standards of Nasdaq and any other applicable Law; provided, further, that the Company shall exercise reasonable authority under applicable Law to permit the inclusion of the Investor Designee on such committee, including by causing an increase in the number of directors on such committee. Subject to the foregoing, the Company shall take appropriate action, effective as of the commencement of business on the first business day immediately after the Closing Date, to allow for the appointment of the Initial Designee to the committees of its board of directors.

(d) The Investor Observer shall be entitled to attend all meetings of the Company's board of directors and any committees thereof and to receive copies of all notices, minutes, consents, and other materials provided to the members of the Company's board of directors (or such committees) at the same time and in the same manner as provided to the Company's board of directors (or such committees).

(e) Notwithstanding the foregoing clauses (c) and (d) of this Section 6.7, the Company reserves the right to withhold any information and to exclude the Investor Designee and the Investor Observer from any portion of a board or committee meeting, if (i) such information or portion of such meeting relates to (x) the Collaboration Agreement or any other agreements between the Company and the Investor, (y) any strategic discussions between the Company and the Investor or (z) any Action between the Company and the Investor or (ii) such access to a board or committee meeting, or access to such information, would, based on advice of outside counsel to the Company, adversely affect the attorney-client privilege of the Company's board of directors; provided that such clause (ii) shall only be applicable to the Investor Designee in connection with any pending Action between the Company and the Investor. In addition, the Investor Observer may be excluded from any meeting of the audit, nomination and compensation committees for any reason at the discretion of the respective committee.

(f) **Corporate Opportunity**. The Company renounces any interest or expectancy of the Company in, or in being offered an opportunity to participate in, any matter, transaction or interest that is presented to, or acquired, created or developed by, or which otherwise comes into the possession of (a) the Investor Designee or the Investor Observer or (b) the Investor or its Affiliates (collectively, "***Affiliated Persons***") and waives any claim against each Affiliated Person arising from the fact that such Affiliated Person (i) pursues or acquires any such corporate opportunity for its own account or the account of any Affiliate or other person, (ii) directs, recommends, sells, assigns or otherwise transfers such corporate opportunity to another person or (iii) does not communicate information regarding such corporate opportunity to the

Company; provided, that, in each such case, that any corporate opportunity which is expressly offered to an Affiliated Person in his or her capacity as a member of the Company's board of directors shall belong to the Company.

6.8. **Conduct of Business**.

(a) The Company covenants and agrees that, between the date of this Agreement and the Closing, except with the prior written consent of Investor, the businesses of the Company and its Subsidiaries shall be conducted only in, and the Company and its Subsidiaries shall not take any action except in, the ordinary course of business and in a manner consistent with past practice, and the Company and each of its Subsidiaries shall use their reasonable best efforts to (A) preserve substantially intact their existing assets, (B) preserve substantially intact their business organization, (C) keep available the services of their current officers and key employees, and (D) comply in all material respects with applicable Law.

(b) The Company covenants and agrees that, between the date of this Agreement and the six (6)-month anniversary of the Closing, except with the prior written consent of Investor, it will not, directly or indirectly, declare, set aside or pay any dividend or make any other distribution or payment (whether in cash, stock or property or any combination thereof) in respect of any Company Securities, or establish a record date for any of the foregoing.

6.9. **Post-Closing Restrictions**. The Company shall not, directly or indirectly, take any action or omit to take any action that would (i) conflict with the terms of this Agreement or otherwise effect any rights or obligations of the parties hereunder (including the Investor's right to acquire up to the Threshold) or (ii) disproportionately affect the Investor or its Affiliates (including their voting rights), as compared to any other equityholder of the Company.

6.10. **Form D; Blue Sky Filings**. The Company agrees to timely file a Form D with respect to the Shares and the Additional Shares as required under Regulation D and to provide a copy thereof promptly upon request of an Investor. The Company shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for, or to qualify the Shares and Additional Shares for, sale to the Investor at the Closing and each Additional Closing under applicable securities or "Blue Sky" Laws of the states of the United States, and shall provide evidence of such actions promptly upon request of such Investor.

6.11. **Removal of Legends**. In connection with any sale or disposition of the Shares and the Additional Shares by the Investor pursuant to Rule 144 or pursuant to any other exemption under the Securities Act such that the purchaser thereof acquires freely tradable shares of Common Stock and upon compliance by the Investor with the requirements of this Agreement, if requested by the Investor, the Company shall cause the Transfer Agent to timely remove any restrictive legends related to the book entry account holding such Shares and Additional Shares and make a new, unlegended entry for such book entry Shares and Additional Shares sold or disposed of without restrictive legends. Upon the earlier of such time as the Shares or Additional Shares (i) have been registered under the Securities Act pursuant to an effective registration statement, (ii) have been sold pursuant to Rule 144, or (iii) are eligible for resale under Rule 144(b)(1) or any

successor provision, the Company shall (A) deliver to the Transfer Agent irrevocable instructions that the Transfer Agent shall make a new, unlegended entry for such book entry Shares and Additional Shares, and (B) cause its counsel to deliver to the Transfer Agent one or more opinions to the effect that the removal of such legends in such circumstances may be effected under the Securities Act. The Company shall be responsible for the fees of its Transfer Agent and all Depository Trust Company fees associated with such issuance.

6.12. **Access to Information**.

(a) From the date hereof until the Closing, the Company will make reasonably available to the Investor's representatives, consultants and their respective counsels for inspection, such information and documents as the Investor reasonably requests, and will make available at reasonable times and to a reasonable extent officers and employees of the Company to discuss the business and affairs of the Company.

(b) Following the Closing, if at any time the Investor determines that applicable accounting requirements require consolidation or other integration of the Company's financial information in Investor's financial reports, the Company shall provide the Investor with such information that the Investor may reasonably request to satisfy such obligations within such timeframes as it may reasonably specify to satisfy its financial reporting timelines. Notwithstanding anything to the contrary in this Agreement, the Company consents to the disclosure of such financial information by the Investor as reasonably necessary to comply with Investor's accounting and disclosure requirements. Further, if at any time the Investor or its independent auditor determines that applicable auditing standards require that the Company be included within the scope of such auditor's audit procedures with respect to its audit of the Investor and its Affiliates, the Company shall, at the Investor's sole expense, reasonably cooperate in a timely fashion with reasonable requests to facilitate any such audit procedures.

6.13. **Use of Proceeds**. The Company agrees that the proceeds from the sale and issuance of the Shares and the Additional Shares to the Investor shall be used to fund the costs and expenses of clinical trials and for general working capital and will not be used for purposes of any cash dividend or cash distribution to any stockholder of the Company.

6.14. **Additional Shares**. The Company shall, at all times prior to the Expiration Date, have authorized and reserved for issuance shares of Common Stock sufficient to issue the Additional Shares.

6.15. **Further Assurances**. Each of the parties shall execute such further documents and perform such further acts (including obtaining any consents, exemptions, authorizations or other actions by, or giving notices to, or making any filings with, any Governmental Authority, if necessary) as may be reasonably requested by the other party to fully implement the intent and purpose of this Agreement.

7. **Conditions to Closing**.

7.1. **Investor's Conditions to Closing**. The Investor's obligation to complete the transactions contemplated by this Agreement, including the purchase of the Shares, is subject to fulfillment or written waiver, at or prior to the Closing (or, with respect to Investor's obligation to complete the purchase of Additional Shares, the applicable Additional Closing), of the following conditions:

(a) **Representations, Warranties and Covenants**. (i) with respect to the Closing, (A) the representations and warranties set forth in Sections 4.1, 4.2, 4.3, 4.4 and 4.5, 4.27 and 4.30 (the "***Company Fundamental Representations***") shall be true and correct in all respects, except for *de minimis* inaccuracies in Section 4.3 which do not result in any increase in the aggregate number of Company Securities outstanding by more than 0.25%, in the aggregate, and (B) the other representations and warranties of the Company contained in this Agreement shall be true and correct (without giving effect to any qualification as to "materiality" or "Material Adverse Effect") in all material respects, in each case of clauses (A) and (B), as of the date hereof and as of the Closing Date (other than such representations and warranties that are expressly made as of another date, in which case as of such other date), and (ii) the covenants and agreements contained in this Agreement to be complied with by the Company on or before the Closing (or the applicable Additional Closing) shall have been complied with in all material respects.

(b) **Company Certificates**. The Investor shall have received from a duly authorized officer of the Company (i) a certificate, dated as of the Closing Date, certifying as to the matters set forth in Section 7.1(a) and (ii) a certificate, dated as of the Closing Date, certifying the resolutions adopted by the Company's board of directors approving the transactions contemplated by this Agreement and certifying the current versions of the Organizational Documents.

(c) **Registration Rights Agreement**. The Investor shall have received an executed counterpart of the Registration Rights Agreement from the Company.

(d) **No Governmental Prohibition**. No Governmental Authority shall have enacted, issued, promulgated, enforced or entered any Law that restrains, enjoins, prohibits or makes illegal the transactions contemplated by this Agreement.

(e) **No Actions**. No Action shall have been commenced or threatened against the Company or the Investor, that challenges, seeks to restrain or seeks to materially and adversely alter the transactions contemplated by this Agreement or that could impose monetary obligations on the Investor.

(f) **Material Adverse Effect**. No Material Adverse Effect shall have occurred since the date of this Agreement and no event shall have occurred that could reasonably be expected to result in a Material Adverse Effect.

(g) **Collaboration Agreement**. The Collaboration Agreement shall be in full force and effect.

(h) **Nasdaq Approval**. The Company shall have filed with Nasdaq a Notification Form: Listing of Additional Shares for the listing of the Shares and, with respect to each Additional Closing, for the listing of the Additional Shares purchased at such Additional Closing, which shall have been approved by Nasdaq.

(i) **Stop Orders**. No stop order or suspension of trading shall have been imposed by Nasdaq, the Commission or any other Governmental Authority with respect to public trading in the Common Stock.

(j) **Opinion**. The Investor shall have received a customary opinion from Dentons US LLP, counsel for the Company, dated as of the Closing Date, in a form reasonably satisfactory to the Investor.

(k) **Consents**. Any consents, approvals, notices, authorizations, orders, clearances, declarations or filings required for the consummation of the transactions contemplated by this Agreement shall have been made and received (and any waiting periods shall have expired or terminated).

7.2. **Company's Conditions to Closing**. The Company's obligation to complete the transactions contemplated by this Agreement, including the sale of the Shares and Additional Shares, is subject to fulfillment or written waiver, at or prior to the Closing (or, with respect to Company's obligation to effect the sale of Additional Shares, the applicable Additional Closing), of the following conditions:

(a) **Representations, Warranties and Covenants**. (i)(A) The representations and warranties set forth in Sections 5.1, 5.2 and 5.3 (the "***Investor Fundamental Representations***") shall be true and correct in all respects and (B) the other representations and warranties of the Investor contained in this Agreement shall be true and correct (without giving effect to any qualification as to "materiality") in all material respects, in each case of clauses (A) and (B), as of the date hereof and as of the Closing Date and, with respect to each Additional Closing, as of the applicable Additional Closing Date (other than such representations and warranties that are expressly made as of another date, in which case as of such other date) and (ii) the covenants and agreements contained in this Agreement to be complied with by the Investor on or before the Closing (or the applicable Additional Closing) shall have been complied with in all material respects.

(b) **Investor Certificate**. The Company shall have received from a duly authorized officer of the Investor a certificate certifying as to the matters set forth in Section 7.2(a);

(c) **Registration Rights Agreement**. The Investor shall have received an executed counterpart of the Registration Rights Agreement from the Investor.

(d) **No Governmental Prohibition**. No Governmental Authority shall have enacted, issued, promulgated, enforced or entered any Law that restrains, enjoins, prohibits or makes illegal the transactions contemplated by this Agreement.

8. **Termination**.

8.1. **Termination**. This Agreement may only be terminated prior to the Closing:

(a) by the mutual written consent of the Company and the Investor;

(b) by either the Company or the Investor, upon written notice to the other after the three (3) month anniversary of the date of this Agreement (the "***Termination Date***"), if the Transaction shall not have been consummated by the Termination Date pursuant to Section 2; provided, however, that the right to terminate this Agreement under this Section 8.1(b) shall not be available to any party whose failure to fulfill any obligation under this Agreement has been the cause of, or resulted in, the failure to consummate the transactions contemplated hereby prior to the Termination Date;

(c) by either the Company or the Investor in the event that any Law restraining, enjoining, prohibiting or otherwise making illegal the transactions contemplated by this Agreement shall have become final and nonappealable;

(d) by the Company if the Investor shall have breached any of its representations, warranties, covenants or agreements contained in this Agreement which would give rise to the failure of a condition set forth in Section 7, which breach cannot be or has not been cured prior to the Termination Date after the giving of written notice by the Company to the Investor specifying such breach; or

(e) by the Investor if the Company shall have breached any of its representations, warranties, covenants or agreements contained in this Agreement which would give rise to the failure of a condition set forth in Section 7, which breach cannot be or has not been cured prior to the Termination Date after the giving of written notice by the Investor to the Company specifying such breach.

8.2. **Effect of Termination**. In the event of the termination of this Agreement pursuant to Section 8.1 hereof, this Agreement (except for this Section 8.2 and Section 9 (other than Section 9.14) hereof, and any definitions set forth in this Agreement and used in such sections) shall forthwith become void and have no effect, without any liability on the part of any party hereto or its Affiliates; provided, however, that nothing contained in this Section 8.2 shall relieve any party from liability for fraud or any breach of any provision of this Agreement prior to termination.

9. **Miscellaneous**.

9.1. **Equitable Adjustments**. In the event that, prior to the issuance of the Shares or the Additional Shares, there occurs any stock split, stock combination, dividend (whether in securities, cash, or other assets), reorganization, recapitalization, conversion, distribution, exchange, reclassification or other similar event (collectively, a "***Stock Event***"), (i) the amount of Shares or Additional Shares, as applicable, to be issued to the Investor pursuant to this Agreement and the Additional Share Price shall be equitably adjusted to put the Investor in the same position as it would have been had the Shares or Additional Shares, as applicable, been issued to the Investor prior to such event, and (ii) if the Common Stock is converted into or exchanged for securities, cash or other assets, all references herein to the Common Stock shall be deemed to refer

to the securities or other assets (including cash) into or for which the Common Stock was converted into or exchanged for. In the event there is any merger or reorganization involving the Company and the Company is no longer the parent entity of the Company and its Subsidiaries, then all references herein to the Company shall be deemed to refer to the parent entity of the Company and its Subsidiaries.

9.2. **Governing Law; Submission to Jurisdiction**. This Agreement shall be governed by and construed in accordance with the Laws of the State of Delaware, without regard to the conflict of Laws principles thereof that would require the application of the Law of any other jurisdiction. Any Action brought, arising out of, or relating to this Agreement shall be brought in the Court of Chancery of the State of Delaware; provided, however, that if such court does not have jurisdiction over such Action, such Action shall be heard and determined exclusively in any federal court located in the State of Delaware. Each party hereby irrevocably submits to the exclusive jurisdiction of said courts in respect of any claim relating to the validity, interpretation and enforcement of this Agreement, and hereby waives, and agrees not to assert, as a defense in any Action in which any such claim is made that it is not subject thereto or that such Action may not be brought or is not maintainable in such courts, or that the venue thereof may not be appropriate or that this Agreement may not be enforced in or by such courts. The parties hereby consent to and grant the Court of Chancery of the State of Delaware and any federal court sitting in the State of Delaware jurisdiction over such parties and over the subject matter of any such Action and agree that mailing of process or other papers in connection with any such Action in the manner provided in Section 9.5 or in such other manner as may be permitted by Law, shall be valid and sufficient thereof.

9.3. **Waiver of Jury Trial**. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY WITH RESPECT TO ANY LITIGATION AMONG THE PARTIES DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY. EACH OF THE PARTIES HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THAT FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTY HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY, AS APPLICABLE, BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

9.4. **No Waiver, Modifications**. It is agreed that no waiver by a party hereto of any breach or default of any of the covenants or agreements set forth herein shall be deemed a waiver as to any subsequent or similar breach or default. The failure of either party to insist on the performance of any obligation hereunder shall not be deemed a waiver of any such obligation. No amendment, modification, waiver, release or discharge to this Agreement shall be binding upon the parties unless in writing and duly executed by authorized representatives of both parties.

9.5. **Notices**. Any consent, notice, report or other communication required or permitted to be given or made under this Agreement by one of the parties to the other party will be delivered

in writing by one of the following means and be effective: (a) upon receipt, if delivered personally; (b) when sent, if sent via e-mail (provided that such sent e-mail is kept on file (whether electronically or otherwise) by the sending party and the sending party does not immediately receive an automatically generated message from the recipient's e-mail server that such e-mail could not be delivered to such recipient); or (c) when delivered by a reputable, commercial overnight courier; provided in all cases addressed to such other party at its address indicated below, or to such other address as the addressee will have last furnished in writing to the addressor and will be effective upon receipt by the addressee.

If to the Investor:

Ultragenyx Pharmaceutical Inc.
60 Leveroni Court
Novato, CA 94949
Attn: Chief Business Officer
Email: Tkassberg@ultragenyx.com

with a copy (which shall not constitute notice) to:

Shearman & Sterling LLP
599 Lexington Avenue
New York, NY 10022-6069
Attention: Robert Masella
J. Russel Denton
Email: Robert.Masella@Shearman.com
Russ.Denton@Shearman.com

If to the Company:

Arcturus Therapeutics, Inc.
10628 Science Center Drive, Suite 250
San Diego, CA 92121
Attn: Chief Executive Officer
Email: joe@arcturusrx.com

with a copy (which shall not constitute notice) to:

Dentons US LLP
1221 Avenue of the Americas
New York, NY 10020-1089
Attn: Jeffrey Baumel
Email: jeffrey.baumel@dentons.com

Written confirmation of receipt (i) given by the recipient of such notice or (ii) provided by an overnight courier service shall be rebuttable evidence of personal service or receipt from an overnight courier service in accordance with clause (a) or (c) above, respectively. A copy of the e-mail transmission containing the time, date and recipient e-mail address shall be rebuttable evidence of receipt by e-mail in accordance with clause (b) above.

9.6. **Entire Agreement**. This Agreement and the Collaboration Agreement contain the entire agreement among the parties with respect to the subject matter hereof and thereof and supersede all prior and contemporaneous arrangements or understandings, whether written or oral, with respect hereto and thereto.

9.7. **Interpretation and Rules of Construction**. Headings in this Agreement are for convenience of reference only and shall not be considered in construing this Agreement. Whenever the context may require, any pronouns used herein shall include the corresponding masculine, feminine or neuter forms, and the singular form of names and pronouns shall include the plural and vice-versa. References in this Agreement to a section or subsection shall be deemed to refer to a section or subsection of this Agreement unless otherwise expressly stated. Whenever the words “include”, “includes” or “including” are used in this Agreement, they are deemed to be followed by the words “without limitation.”

9.8. **Severability**. If any provision of this Agreement is held to be illegal, invalid or unenforceable under any present or future Law, and if the rights or obligations of a party under this Agreement will not be materially and adversely affected thereby, (a) such provision shall be fully severable, (b) this Agreement shall be construed and enforced as if such illegal, invalid or unenforceable provision had never comprised a part hereof, (c) the remaining provisions of this Agreement shall remain in full force and effect and shall not be affected by the illegal, invalid or unenforceable provision or by its severance herefrom and (d) in lieu of such illegal, invalid or unenforceable provision, the parties shall negotiate in good faith a substitute legal, valid and enforceable provision as similar in terms to such illegal, invalid or unenforceable provision as possible and as reasonably acceptable to the parties.

9.9. **Assignment**. Except for an assignment by the Investor of this Agreement or any rights hereunder to an Affiliate (which assignment will not relieve the Investor of any obligation hereunder), neither this Agreement nor any of the rights or obligations hereunder may be assigned by either the Investor or the Company without (a) the prior written consent of Company in the case of any assignment by the Investor or (b) the prior written consent of the Investor in the case of an assignment by the Company.

9.10. **Successors and Assigns**. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

9.11. **Counterparts**. This Agreement may be executed in counterparts, each of which shall be deemed an original but which together shall constitute one and the same instrument. In the event that any signature is delivered by facsimile transmission or by an e-mail which contains a portable document format (.pdf) file of an executed signature page, such executed signature page shall create a valid and binding obligation of the party executing it (or on whose behalf such signature page is executed) with the same force and effect as if such executed signature page were an original thereof.

9.12. **Third Party Beneficiaries**. None of the provisions of this Agreement (other than Section 6.5) shall be for the benefit of or enforceable by any Third Party, including any creditor of any party hereto, except that each Affiliate of the Investor is an express third party beneficiary entitled to enforce this agreement directly against the Company. No Third Party shall obtain any

right under any provision of this Agreement or shall by reason of any such provision make any claim in respect of any debt, liability or obligation (or otherwise) against any party hereto.

9.13. **No Strict Construction**. This Agreement has been prepared jointly and will not be construed against either party. No presumption as to construction of this Agreement shall apply against either party with respect to any ambiguity in the wording of any provision(s) of this Agreement irrespective of which party may be deemed to have authored the ambiguous provision(s).

9.14. **Survival of Warranties**. The representations and warranties of the Company and the Investor contained in this Agreement shall survive the Closing for eighteen (18) months; provided, however, that the Investor Fundamental Representations and the Company Fundamental Representations shall survive indefinitely. It is the intention of the parties to modify the statute of limitations.

9.15. **Specific Performance**. The rights, powers and remedies of the parties under this Agreement are cumulative and not exclusive of any other right, power or remedy which such parties may have under any other agreement or Law. No single or partial assertion or exercise of any right, power or remedy of a party hereunder shall preclude any other or further assertion or exercise thereof. The parties hereby acknowledge and agree that the rights of the parties hereunder are special, unique and of extraordinary character, and that if any party refuses or otherwise fails to act, or to cause its Affiliates to act, in accordance with the provisions of this Agreement, such refusal or failure would result in irreparable injury to the Company or the Investor as the case may be, the exact amount of which would be difficult to ascertain or estimate and the remedies at Law for which would not be reasonable or adequate compensation. Accordingly, if any party refuses or otherwise fails to act, or to cause its Affiliates to act, in accordance with the provisions of this Agreement, then, in addition to any other remedy which may be available to any damaged party at Law or in equity, such damaged party will be entitled to specific performance and injunctive relief, without posting bond or other security, and without the necessity of proving actual or threatened damages, which remedy such damaged party will be entitled to seek in any court of competent jurisdiction.

9.16. **Expenses**. Except as otherwise specified in this Agreement, each party shall pay its own fees and expenses in connection with the preparation, negotiation, execution, delivery and performance of this Agreement.

(*signature page follows*)

IN WITNESS WHEREOF, the parties have executed and delivered this Agreement as of the date first above written.

ARCTURUS THERAPEUTICS HOLDINGS INC.

By: /s/ Joseph E. Payne
Name: Joseph E. Payne
Title: Chief Executive Officer

ARCTURUS THERAPEUTICS LTD.

By: /s/ Joseph E. Payne
Name: Joseph E. Payne
Title: Chief Executive Officer

ULTRAGENYX PHARMACEUTICAL INC.

By: /s/ Emil D. Kakkis
Name: Emil D. Kakkis
Title: President and Chief Executive Officer

Exhibit 10.2

*****Text Omitted and Filed Separately**
with the Securities and Exchange Commission.
Confidential Treatment Requested
Under 17 C.F.R. Sections 200.80(b)(4) and Rule 24b-2

THIRD AMENDMENT
TO
RESEARCH COLLABORATION AND LICENSE AGREEMENT

This **THIRD AMENDMENT TO RESEARCH COLLABORATION AND LICENSE AGREEMENT** (the "**Third Amendment**") is effective as of June 18, 2019 ("**Third Amendment Effective Date**"), by and between **ULTRAGENYX PHARMACEUTICAL INC.**, a Delaware corporation having an address at 60 Leveroni Court, Novato, CA, 94949 ("**Ultragenyx**"), and **ARCTURUS THERAPEUTICS, INC.**, a Delaware corporation having an address at 10628 Science Center Drive, Suite 250, San Diego, CA 92121 ("**Arcturus**"), and, solely for purposes of Section 5(b), **ARCTURUS THERAPEUTICS HOLDINGS INC,** a Delaware Corporation ("**Arcturus Parent**"), and amends that certain Research Collaboration and License Agreement between the Parties, dated October 26, 2015, as amended on October 17, 2017 and April 20, 2018 (the "**License Agreement**").

The Parties, for their mutual benefit, now wish to amend the License Agreement to, among other things, expand the scope of the collaboration to include additional types of nucleic acid products and to include targets relevant to any disease or indication. Capitalized terms used herein which are not defined shall have the respective meanings ascribed to them in the License Agreement. All references to the term "Agreement" in the License Agreement shall be deemed to include all of the terms and conditions of this Third Amendment.

NOW, THEREFORE, in consideration of good and valuable consideration the receipt and sufficiency of which is hereby acknowledged and of the mutual agreements made herein, the Parties hereby agree as follows:

1. DEFINITIONS

(a) Section 1.6 of the License Agreement is hereby deleted and replaced with the following:

"**1.6** "***Arcturus Know-How***" means any Know-How Controlled by Arcturus and/or any of its Affiliates as of the Effective Date and/or during the Term that is actually used by Arcturus or its Affiliates in its Collaborative Development activities and/or is necessary or useful for the Exploitation of any Compound and/or Product. For the avoidance of doubt, (a) the term Arcturus Know-How includes all Know-How Controlled by Arcturus and/or any of its Affiliates as of the Effective Date and/or during the Term that relate to the manufacturing process for any Nucleic Acid Product and (b) Arcturus Know-How does not include the Arcturus Patents. Subject to and to the extent as provided in Section 13.4, the use of "Affiliate" in this definition shall exclude any Third Party that becomes an Affiliate due to such Third Party's or such Third Party's Affiliate acquisition of Arcturus in a Change of Control Transaction."

(b) Section 1.8 of the License Agreement is hereby deleted and replaced with the following:

"**1.8** ***"Arcturus Patents***" means all Patent Rights Controlled by Arcturus and/or any of its Affiliates as of the Effective Date and/or during the Term that (a) Cover any Compound

and/or Product (but not with respect to any active ingredient other than a Compound); (b) is necessary for the Exploitation of any Compound and/or Product (but not with respect to any active ingredient other than a Compound); and/or (c) is reasonably useful for the Exploitation of any Compound and/or Product (but not with respect to any active ingredient other than a Compound) other than Arcturus Platform Technology. For the avoidance of any doubt and notwithstanding anything to the contrary set forth in subsection (c) above, the term Arcturus Patents includes all Patent Rights Controlled by Arcturus and/or any of its Affiliates as of the Effective Date and/or during the Term that Cover the manufacturing process for any mRNA, UNA Oligomer, DNA and/or siRNA within a Compound or Product. The Arcturus Patents existing as of the Third Amendment Effective Date are listed on Exhibit A. Subject to and to the extent as provided in Section 13.4, the use of "Affiliate" in this definition shall exclude any Third Party that becomes an Affiliate due to such Third Party's or such Third Party's Affiliate acquisition of Arcturus in a Change of Control Transaction."

(c) Section 1.25 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"1.25 "***Compound***" means any mRNA, UNA Oligomer, DNA and/or siRNA designed to express or encode a Development Target or designed to knockout or otherwise modulate the expression level, properties, half-life, distribution or activity of any mRNA, UNA Oligomer, DNA and/or siRNA that expresses or encodes a Development Target, in each case discovered and/or optimized under the Collaborative Development Plan, and any and all derivatives of any such molecule."

(d) Section 1.42 of the License Agreement (definition of Expansion Option Payment) is hereby deleted in its entirety.

(e) Section 1.100 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"1.100 "***Nucleic Acid Product***" means any product containing an mRNA, UNA Oligomer, DNA or siRNA and is designed to have its therapeutic effect through one of these nucleic acid modalities."

(f) Section 1.104 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"**1.104** "***Target***" means any single protein (i.e., a protein designated by a unique NCBI reference sequence but including all of its naturally-occurring mutations and variants)."

(g) The definition of Nucleic Acid Chemistry Technology in the last sentence of Section 7.6 is hereby deleted in its entirety and replaced with the following:

"***Nucleic Acid Chemistry Technology***" means technologies related to the chemical and enzymatic modification of nucleobases or conformational and/or structural features of a Compound that increases resistance to degradation resulting in a longer half-life. Nucleic Acid Chemistry Technology does not include improvements related to codon-optimization, modification of the 5' cap structure, use of alternative 5' or 3' prime sequences, modification of the 5' untranslated region or 3' untranslated region, or variations in the polyA tail sequence or length."

(h) The following new Sections 1.117, 1.118 and 1.119 are hereby added after Section 1.116 of the License Agreement:

"**1.117** "***DNA***" means an active pharmaceutical ingredient that is any single or double stranded molecule containing deoxyribonucleic acid nucleotide/s, natural or modified, and is used to achieve expression or inhibition of a target protein.

1.118 "***siRNA***" means small interfering Ribonucleic Acid, an active pharmaceutical ingredient that is a double-stranded RNA molecule, natural or modified used to inhibit expression of a target protein.

1.119 "***Viral Gene Therapy Product***" means any product that uses a virus to deliver genetic cargo into cells to replace missing or malfunctioning genes."

2. NUCLEIC ACID PRODUCT. All references to "RNA Product" under the License Agreement shall be replaced with "Nucleic Acid Product".

3. IMPROVEMENT IP. Notwithstanding anything to the contrary in this Agreement, including Section 13.4, in the event Arcturus undergoes a Change of Control Transaction after the Third Amendment Effective Date, then the intellectual property of the entity(ies) surviving such Change of Control Transaction that is developed after such Change of Control Transaction shall not be excluded from the definition of Arcturus Technology to the extent (a) such intellectual property is developed through the use of Arcturus Know-How, Arcturus Patents, Arcturus Platform Technology or Improvements to Arcturus Platform Technology, in each case, existing as of the date of such Change of Control Transaction or (b) constituting an improvement or enhancement to the Arcturus Know-How, Arcturus Patents, Arcturus Platform Technology or Improvements to Arcturus Platform Technology, in each case, existing as of the date of such Change of Control Transaction ((a) and (b) collectively, the "***Improvement IP***"). For clarity, the Improvement IP shall be included in the scope of the license granted to Ultragenyx under this Agreement without regard to such Change of Control Transaction.

4. TARGET SELECTION; EXCLUSIVITY

(a) Section 3.1.3 of the License Agreement is hereby deleted in its entirety and replaced with the following

"**3.1.3 Ultragenyx Expansion Option**. During the Reserved Target Exclusivity Period (so long as there are no outstanding, overdue payments due to Arcturus under this Agreement), on a Reserved Target-by-Reserved Target basis, Ultragenyx shall have the option, at no additional cost to Ultragenyx, to convert [...***...] to an additional Development Target by providing Arcturus with written notification (such option, the "***Ultragenyx Expansion Option***" and such notification, the "***Ultragenyx Expansion Notice***"), whereupon (a) the list of Development Targets set forth on **Exhibit B** shall automatically be amended by adding such Target; (b) the list of Reserved Targets set forth on **Exhibit C** shall be amended by deleting such Target. The Parties shall promptly generate a Collaborative Development Plan for such new Development Target in accordance with Section 4.1. Notwithstanding the foregoing, at the time of any such exercise of an Ultragenyx Expansion Option, if there are three (3) or more Development Targets for which Arcturus is engaged in the performance of active and ongoing Collaborative Development pursuant to the respective Collaborative Development Plans, then such Collaborative Development Plan for such new Development Target shall not include any obligations for Arcturus to actively conduct Collaborative Development until

the earlier of (a) completion of Arcturus's Collaborative Development obligations under other Collaborative Development Plan(s) such that (without counting this Collaborative Development Plan for such new Development Target) there are two (2) or fewer Development Targets for which Arcturus is engaged in the performance of active and ongoing Collaborative Development and (b) six (6) months after Ultragenyx's exercise of the applicable Ultragenyx Expansion Option. For avoidance of doubt, the conversion of a Reserved Target to an additional Development Target shall not permit Ultragenyx to add an additional Reserved Target in place of such converted Reserved Target."

(b) Section 3.2.1 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"**3.2.1 Reserved Target Selection**. As of the Third Amendment Effective Date, the Parties have agreed to a list of three (3) Targets for which Ultragenyx will have the exclusive right to evaluate whether it desires to initiate Collaborative Development, such list set forth on **Exhibit C** (each, a "***Reserved Target***"). During the Reserved Target Exclusivity Period, Ultragenyx shall have the right to nominate seven (7) additional Targets to be deemed Reserved Targets under this Agreement, at no additional cost, in accordance with the terms of Section 3.2.2. Ultragenyx shall only have the right to initiate Collaborative Development under this Agreement with respect to a particular Reserved Target by converting such Reserved Target into a Replacement Target pursuant to Section 3.1.2 or by exercising its option to designate such Reserved Target as an additional Development Target pursuant to Section 3.1.3; provided, that Ultragenyx shall have the right to conduct preliminary non-clinical research with respect to Reserved Targets and related compounds to evaluate whether it wishes to convert such Reserved target into a Development Target and, at Ultragenyx's request and sole cost and expense, Arcturus shall cooperate with Ultragenyx to conduct activities with respect to such Reserved Targets to facilitate such evaluation."

(c) Section 3.2.2 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"**3.2.2 New Reserved Targets**

(a) During the Reserved Target Exclusivity Period, Ultragenyx shall have the right to nominate a new Target to be deemed a Reserved Target and to replace each Reserved Target with a proposed new Target, in each case, by providing Arcturus with written notice thereof in accordance with Section 3.2.2(b); provided that as of the time Ultragenyx provides such notification, (i) Arcturus has not already granted an option or a license to any Third Party to develop and/or commercialize products with respect to such Target, or otherwise has entered into an agreement with a Third Party that prevents Arcturus from accepting such Target as a Reserved Target, (ii) Arcturus has not commenced a bona fide internal research and development program directed to such Target and such program has completed, at a minimum, preclinical in vivo proof of concept, (iii) such Target was not previously subject to Third Party rights or obligations to Third Parties under an agreement between Arcturus and a Third Party and returned to Arcturus, where the Target program has been advanced to demonstrate proof of concept activity in an animal model and (iv) such Target is not one of the Targets identified on **Exhibit G** attached hereto (each, an "***Unavailable Target***"). Ultragenyx shall have the right to nominate seven (7) additional Targets to be deemed Reserved Targets under this Agreement and Ultragenyx shall have the right to make

no more than a total of eight (8) replacements of existing Reserved Targets pursuant to this Section 3.2.2.

(b) During the Reserved Target Exclusivity Period, in the event that (i) pursuant to Section 3.2.1 Ultragenyx desires to select a new Target to be deemed a Reserved Target or (ii) pursuant to Section 3.2.2(a) Ultragenyx desires to select a new Target to be deemed a Reserved Target and to replace a Reserved Target with a proposed new Target, then Ultragenyx shall provide written notice thereof to Arcturus (provided, that such notice shall not disclose the applicable selected Target). Within ten (10) Business Days after Arcturus' receipt of any such notice from Ultragenyx, the Parties shall jointly agree in good faith on an independent, U.S.-based law firm that has expertise in life sciences partnering transactions (an "***Expert***") to determine whether such selected new Target is available to become a Reserved Target under this Agreement or whether it is an Unavailable Target. If the Parties do not agree upon an Expert within such time period, than each Party shall select its own proposed Expert within five (5) Business Days of the expiration of such time period and the two proposed Experts shall decide on an independent Expert to serve as the Expert for such review within five (5) Business Days of selection of the last proposed Expert. Within three (3) Business Days of selection (and joint engagement by the Parties) of such Expert, (x) Ultragenyx shall disclose to such Expert its selected new Target and (y) Arcturus shall disclose to such Expert a list of all Targets that Arcturus in good faith believes are Unavailable Targets as of such date. If the Target is identified on the list of Unavailable Targets, such Expert shall ask Arcturus to provide reasonable documentation demonstrating why such Target should be classified as an Unavailable Target pursuant to the terms of this Agreement (including, if applicable, a copy of any agreement between Arcturus and a Third Party or documentation evidencing the internal research and development records with respect to such Target). Within ten (10) Business Days after receipt such information from Ultragenyx and Arcturus, the Expert shall advise both Parties in writing whether such Target is an Unavailable Target. The Parties shall share equally the fees of any such Expert.

(c) Promptly upon determination by the Expert that any Target selected by Ultragenyx pursuant to Section 3.2.2(a) or Section 3.2.1 is not an Unavailable Target, the Expert shall disclose such new Target to Arcturus and the list of Reserved Targets set forth in **Exhibit C** shall automatically be amended accordingly to include such new Target as a Reserved Target. For clarity, at any given time during the Reserved Target Exclusivity Period, there shall be a maximum of ten (10) Reserved Targets."

(d) Section 3.3.1 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"**3.3.1 Arcturus Development Target Exclusivity**.

(a) Nucleic Acid Exclusivity. With respect to a particular Development Target, during the corresponding Development Target Exclusivity Period, Arcturus shall not conduct or participate in, or advise, assist or intentionally enable any Third Party to conduct or participate in the preclinical or clinical development, manufacture or commercialization of any Nucleic Acid Product with respect to such Development Target. The "***Development Target Exclusivity Period***" means the period beginning on the date that a Target becomes a Development Target and ending on the earlier of (i)

the date that such Development Target becomes a Discontinued Target or (ii) termination of the Agreement with respect to such Development Target.

(b) Right of First Negotiation with Respect to Nucleic Acid Products. On a Development Target-by-Development Target basis, during the corresponding Development Target Exclusivity Period, Arcturus hereby grants Ultragenyx an exclusive right of first negotiation to obtain an exclusive license to Exploit products that are not Nucleic Acid Products with respect to each Development Target within the Territory (each, a "***Development Target ROFN***") as further described herein. Arcturus shall provide written notice to Ultragenyx promptly upon Arcturus' decision to seek a partner for the research, development and/or commercialization of any such Nucleic Acid Product with respect to a Development Target ("***Development Target ROFN Notice***"). Ultragenyx shall have [...***...] days from its receipt of the Development Target ROFN Notice to notify Arcturus if Ultragenyx desires to exercise its Development Target ROFN with respect to such Development Target and upon such notice from Ultragenyx, Arcturus and Ultragenyx will negotiate such rights in good faith for a period of [...***...] (the "***Development Target ROFN Negotiation Period***"). If, at the end of the Development Target ROFN Negotiation Period, Arcturus and Ultragenyx are unable to reach agreement on such terms, or if Ultragenyx does not notify Arcturus of its interest in such Development Target during such [...***...] period, Arcturus shall be free to grant a license or enter into any other arrangement with a Third Party to Exploit such Nucleic Acid Products with respect to such Development Target; provided, for clarity, that this Section 3.3.1(b) shall not relieve Arcturus of its restrictions under Section 3.3.1(a) or (c).

(c) LUNAR Exclusivity. Within the first four (4) years after the Third Amendment Effective Date, Arcturus shall not conduct or participate in, or advise, assist or intentionally enable any Third Party to conduct or participate in the preclinical or clinical development, manufacture or commercialization of any product utilizing LUNAR Nanoparticle Delivery Technology with respect to a Development Target."

(e) Section 3.3.2 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"**3.3.2 Ultragenyx Development Target Exclusivity**. With respect to a particular Development Target, during the corresponding Development Target Exclusivity Period, Ultragenyx shall not conduct or participate in, or advise, assist or intentionally enable any Third Party to conduct or participate in the preclinical or clinical development, manufacture or commercialization of any product (other than a Product) containing any mRNA, UNA Oligomer, DNA or siRNA with respect to such Development Target. For clarity, the foregoing shall not restrict Ultragenyx's rights with respect to any Viral Gene Therapy Product."

(f) Section 3.3.3 of the License Agreement 3 (but not Section 3.3.3(a) of the License Agreement which shall remain in full force and effect and unamended by this Section 3(f) of the Third Amendment) is hereby deleted in its entirety and replaced with the following:

"**3.3.3 Reserved Target Exclusivity**. With respect to each Reserved Target, during the Reserved Target Exclusivity Period, Arcturus shall not conduct or participate in, or advise, assist or intentionally enable any Third Party to conduct or participate in the preclinical or clinical development, manufacture or commercialization of (a) any Nucleic Acid Product

with respect to such Reserved Target, or (b) without offering Ultragenyx the right of first negotiation (as described in Section 3.3.3(a)), any other product utilizing the LUNAR Delivery Technology with respect to such Reserved Target. The foregoing restriction shall expire on the fourth anniversary of the Third Amendment Effective Date (the "***Reserved Target Exclusivity Period***"), provided, that the Reserved Target Exclusivity Period may be extended, upon written notice to Arcturus, on a Reserved Target-by-Reserved Target basis for up to three (3) additional one year period(s) by paying the Exclusivity Extension Fee pursuant to Section 7.3. For clarity, Section 3.3.1 and not this Section 3.3.3 shall apply to any Reserved Target that becomes a Development Target pursuant to Section 3.1.2 or Section 3.1.3."

(g) Section 3.5.1 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"3.5.1 For each Discontinued Target: (i) all licenses granted to Ultragenyx under this Agreement with respect to such Discontinued Target will terminate, (ii) Ultragenyx shall grant and hereby grants to Arcturus an exclusive, royalty-bearing (in accordance with Section 3.5.2) worldwide, perpetual (provided that Arcturus fulfills its payment obligations under Section 3.5.2, subject to breach/cure procedures comparable to that described in Section 12.2) license, with right of sublicense, under (a) all Product-Specific Technology, (b) Collaboration Technology (including Joint Collaboration Technology) and (c) other Patent Rights and Know-How that as of the date of discontinuation of the Discontinued Target had been practiced or used by Ultragenyx under this Agreement, in each case to the extent Controlled by Ultragenyx and/or its Affiliates, to Exploit Compounds and Products with respect to such Discontinued Target ("***Discontinued Products***"), provided that such license shall not include the right for Arcturus to Exploit any type of Nucleic Acid Product other than a product containing any mRNA, UNA Oligomer, DNA or siRNA unless otherwise expressly agreed in writing by the Parties; (iii) Ultragenyx shall, within [...***...] of the applicable Development Target becoming a Discontinued Target and at Arcturus's expense, transfer to Arcturus available data and information relating to such Discontinued Products Controlled by Ultragenyx and in Ultragenyx's possession at such time, (iv) if mutually agreed by the Parties, Ultragenyx shall transfer to Arcturus the responsibility for the prosecution and maintenance of all Product-Specific Patents that specifically pertain to Compounds and/or Products with respect to the Discontinued Target and Arcturus shall perform such prosecution and maintenance activities in accordance with Section 8.2.2 and (v) Arcturus shall have the first right to enforce such Product-Specific Patents in a Product Infringement with respect to Compounds and/or Products with respect to the Discontinued Target in the manner similar to Ultragenyx's enforcement rights described in Section 8. The license granted by Ultragenyx to Arcturus pursuant to this Section 3.5.1 shall include, for the avoidance of any doubt, any and all improvements to the process of manufacturing Nucleic Acid Products developed by Ultragenyx during the term of this Agreement, to the extent Controlled by Ultragenyx and/or its Affiliates and to the extent practiced or used by Ultragenyx under this Agreement."

5. COLLABORATIVE DEVELOPMENT

(a) Section 4.2 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"4.2 Collaborative Development of Products. Upon approval by the JSC of the applicable Collaborative Development Plan and associated Budget, each Party shall

commence and conduct Collaborative Development activities assigned to it under, and in accordance with, such Collaborative Development Plan in good scientific manner and in accordance with all applicable Laws. For clarity, Ultragenyx shall have the right to generate modified products or derivatives incorporating the Compound identified by Arcturus under the Collaborative Development Plan, provided that (i) Ultragenyx shall promptly identify in writing all such modified products and derivatives to Arcturus and (ii) such modified products and derivatives shall be deemed as Products under this Agreement. Ultragenyx shall be solely responsible, at its discretion, for the development, manufacture and, if successful, commercialization of any and all Products after their respective PCC Designation."

(b) Section 4.5.3 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"**4.5.3 Data Sharing**. Arcturus shall promptly and regularly make available to Ultragenyx, through the JSC (or any applicable subcommittee established by the JSC), all topline data generated by Arcturus and its Affiliates or on their behalf under each Collaborative Development Plan. Upon the reasonable advanced written request Ultragenyx, Arcturus shall promptly make available to Ultragenyx any data and materials described in such Collaborative Development Plan for delivery by Arcturus to Ultragenyx or as otherwise reasonably requested by Ultragenyx, including all Know-How in the Opt-In Data Package. In addition, on a calendar quarter basis, and more frequently upon the reasonable advanced written request of Ultragenyx, Arcturus shall promptly make available to Ultragenyx (a) copies of all pending and issued Arcturus Patents that have disclosures and/or claims which Cover the composition of a Compound or Product or the method of making or using a Compound or Product and (b) any other data reasonably necessary or useful for Ultragenyx to prepare and file patent applications or Regulatory Filings for Products permitted by this Agreement. Arcturus shall allow Ultragenyx to inspect and, to the extent reasonably necessary or useful for regulatory or intellectual property protection purposes, copy such records. Ultragenyx shall promptly and regularly make available to Arcturus: (i) all data generated by Ultragenyx and its Affiliates or on their behalf with respect to any Products to the extent that such data was generated using funds, in whole or in part, paid by Arcturus and (ii) any other non-clinical development and clinical development data related to the safety of the Arcturus Platform Technology that would require adverse event reporting to applicable Regulatory Authorities. Each Party shall also regularly disclose to the other Party all new Arcturus Platform Technology and Improvements to Arcturus Platform Technology generated or acquired by such Party (as applicable) during the Term to the extent necessary or useful for the Exploitation of a Compound or Product (including any lipid used in any formulation thereof) under this Agreement.

6. MANUFACTURING

(a) The following new Section 6.6 is hereby added at the end of Section 6.5 of the License Agreement:

6.6 **Manufacturing**. In the event Ultragenyx decides to incorporate and use LUNAR Nanoparticle Delivery Technology in its manufacturing process for any Compound or Product, then prior to engaging any Third Party manufacturer to use such LUNAR Nanoparticle Delivery Technology in the manufacture of such Compound or Product, Ultragenyx shall consult with Arcturus regarding potential Third Party manufacturers and

Ultragenyx shall reasonably consider any comments provided by Arcturus. Ultragenyx shall have the right to grant one or more sublicenses under the licenses granted to Ultragenyx in Section 5.1 and/or 5.2.3 to manufacture the Compound and Product in accordance with the terms of Section 5.3. Without limiting the generality of the foregoing, Ultragenyx shall ensure that any such Third Party manufacturer is bound by obligations of confidentiality and non-use at least as restrictive as those set forth in Article 11 of this Agreement.

7. FINANCIAL TERMS

(a) Third Amendment Upfront Payment. As partial consideration for the rights granted to Ultragenyx by Arcturus under this Third Amendment, Ultragenyx will pay to Arcturus a one-time payment of Six Million Dollars (US$6,000,000) (the "***Upfront Payment***") within five (5) business days after the Third Amendment Effective Date.

(b) Expansion Option Payment. Section 7.2 of the License Agreement is hereby deleted in its entirety.

(c) Exclusivity Extension Fee. The second sentence of Section 7.3 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"All Exclusivity Extension Fees paid for a particular Reserved Target prior to the Third Amendment Effective Date that becomes a Development Target shall be fully creditable against any Milestone Payments due for the corresponding Development Target pursuant to Section 7.7.1"

(d) Optimized Lead Milestone. Section 7.5 of the License Agreement is hereby deleted in its entirety.

(e) Option Exercise Fee. The first sentence of Section 7.6 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"For each Development Target for which Ultragenyx exercises its option under Section 5.2, within [...***...] after such option exercise, Ultragenyx shall pay Arcturus a one-time, non-refundable, non-creditable option exercise fee, in the amount of: [...***...].

(f) The following new paragraph (g) is added at the end of Section 7.7.1 of the License Agreement:

"Notwithstanding the foregoing, with respect to any Development Target that was converted to a Development Target from a Reserved Target prior to the Third Amendment Effective Date, the Milestone Payments payable for each such Development Target shall, to the extent applicable, be reduced by the amount of all Exclusivity Extension Fee(s) paid for such Development Target under Section 7.3."

(g) Section 7.7.3 of the License Agreement is hereby deleted in its entirety and replaced with the following:

"7.7.3 **No Use of Specified Technology**. On a Product-by-Product basis, in the event that the Exploitation of a Product in any given country within the Territory does not utilize (a) (i) the LUNAR Nanoparticle Delivery Technology Covered by either an Arcturus Patent

and/or a Product-Specific Patent or (ii) another nucleic acid delivery technology Covered by an Arcturus Patent, or (b) (i) a Nucleic Acid Chemistry Technology Covered by an Arcturus Patent that results in an increase in mRNA half-life or (ii) the incorporation of an unlocked nucleic acid into an siRNA Covered by an Arcturus Patent, then the corresponding milestone payment(s) set forth in Section 7.7.1 and 7.7.2 payable in such country with respect to such Product shall be reduced by [...***...]. For example, if the Exploitation of a particular Product in a given country in the Territory does not utilize technology described under (a) nor technology described under (b), then the corresponding milestone payment(s) set forth in Section 7.7.1 and 7.7.2 payable in such country with respect to such Product shall be reduced by [...***...]. As another example, if the Exploitation of a particular Product in a given country in the Territory does not utilize technology described under (a) but does utilize technology described under (b), then the corresponding milestone payment(s) set forth in Section 7.7.1 and 7.7.2 payable in such country with respect to such Product shall be reduced by [...***...]. As yet another example, if the Exploitation of a particular Product in a given country in the Territory utilizes technology described under (a) and (b), then this Section 7.7.3 shall not act to reduce the corresponding milestone payment(s) set forth in Section 7.7.1 and 7.7.2 payable in such country with respect to such Product."

(h) Section 7.8.4(c) of the License Agreement is hereby deleted in its entirety and replaced with the following:

"7.8.4(c) **No Use of Specified Technology**. On a Product-by-Product basis, in the event that a Selling Party's sale of Product does not utilize (a) (i) the LUNAR Nanoparticle Delivery Technology Covered by any Arcturus Patent or Product-Specific Patent or (ii) another nucleic acid delivery technology Covered by an Arcturus Patent, or (b) (i) a Nucleic Acid Chemistry Technology Covered by an Arcturus Patent that results in an increase in mRNA half-life or (ii) the incorporation of an unlocked nucleic acid into an siRNA Covered by an Arcturus Patent, then the royalty rates set forth in Section 7.8.1 with respect to Net Sales for such Product in such country shall be reduced by [...***...] of what would otherwise have been due in the absence of such reduction, subject in all cases to the terms of Section 7.8.4(e). For example, if the Exploitation of a particular Product in a given country in the Territory does not utilize technology described under (a) nor technology described under (b), then the royalty rates set forth in Section 7.8.1 with respect to Net Sales for such Product in such country shall be reduced by [...***...] of what would otherwise have been due in the absence of such reduction, subject in all cases to the terms of Section 7.8.4(e). As another example, if the Exploitation of a particular Product in a given country in the Territory does not utilize technology described under (a) but does utilize technology described under (b), then the royalty rates set forth in Section 7.8.1 with respect to Net Sales for such Product in such country shall be reduced by [...***...] of what would otherwise have been due in the absence of such reduction, subject in all cases to the terms of Section 7.8.4(e). As yet another example, if the Exploitation of a particular Product in a given country in the Territory utilizes technology described under (a) and (b), then this Section 7.8.4(c) shall not act to reduce the royalty rates set forth in Section 7.8.1 with respect to Net Sales for such Product in such country."

8. Equity Investment. Concurrent with the execution of this Third Amendment, the Parties shall execute that certain Equity Purchase Agreement pursuant to which Ultragenyx will purchase 2,400,000 of Arcturus Parent's common stock for Twenty-Four Million Dollars (US$24,000,000) (the "***Initial Investment Amount***") in accordance with the terms and conditions set forth therein (the "***Equity Purchase Agreement***"). Additionally, pursuant to the Equity Purchase Agreement, Ultragenyx shall have

the option to purchase another 600,000 shares of Arcturus Parent's common stock at the price set forth in the Equity Purchase Agreement, which option can be exercised in accordance with the terms and conditions set forth in the Equity Purchase Agreement. Notwithstanding the restrictions set forth in Section 11.1.2 of the License Agreement, Ultragenyx shall not be prohibited from purchasing or selling equity securities of Arcturus solely as a result of having access to Confidential Information of Arcturus unless prohibited by any applicable Law or any policy of Arcturus applicable generally to its directors and Affiliates. For the avoidance of any doubt, the Parties hereby agree and confirm that (a) the terms of this Agreement are commercially reasonable to both Parties without taking into account the Equity Purchase Agreement and (b) the entry into the Equity Purchase Agreement is not a condition to the entry into this Agreement.

9. EXHIBITS

(a) **Exhibit A** of the License Agreement is hereby deleted in its entirety and replaced with **Exhibit A** attached hereto. As of the Third Amendment Effective Date, Arcturus warrants to Ultragenyx that **Exhibit A** attached to this Third Amendment is a complete and accurate list of all Arcturus Patents existing as of the Third Amendment Effective Date.

(b) **Exhibit C** of the License Agreement is hereby deleted in its entirety and replaced with **Exhibit C** attached hereto.

(c) **Exhibit G** attached hereto is hereby added as new **Exhibit G** to the License Agreement.

10. MISCELLANEOUS

(a) **No Other Amendments**. Except as herein set forth, the License Agreement has not been modified and, as amended by this Third Amendment, remains in full force and effect.

(b) **Entire Agreement**. The License Agreement as modified by this Third Amendment is both a final expression of the Parties' agreement and a complete and exclusive statement with respect to its subject matter. They supersede all prior and contemporaneous agreements and communications, whether written or oral, of the Parties regarding this subject matter.

(c) **Severability**. If any one or more provisions of this Third Amendment is held to be invalid, illegal, or unenforceable, the affected provisions of this Agreement shall be curtailed and limited only to the extent necessary to bring it within the applicable legal requirements and the validity, legality, and enforceability of the remaining provisions of this Agreement shall not in any way be affected or impaired thereby.

(d) **Counterparts**. This Third Amendment may be executed in counterparts, each of which will be considered an original, but all of which together will constitute the same instrument. Once signed, any reproduction of this Third Amendment made by reliable means (e.g., photocopy, portable document format (PDF) or facsimile) is considered an original.

{SIGNATURES ON FOLLOWING PAGE}

IN WITNESS WHEREOF, the duly authorized representatives of the Parties have executed this Third Amendment effective as of the Third Amendment Effective Date.

ULTRAGENYX PHARMACEUTICAL INC.

By: /s/ Emil D. Kakkis
Name: Emil D. Kakkis
Title: President and Chief Executive Officer

ARCTURUS THERAPEUTICS, INC.

By: /s/ Joseph E. Payne
Name: Joseph E. Payne
Title: Chief Executive Officer

Solely for purposes of Section 8,
ARCTURUS THERAPEUTICS HOLDINGS INC.

By: /s/ Joseph E. Payne
Name: Joseph E. Payne
Title: Chief Executive Officer

Exhibit A

Arcturus Patents

[...***...]

Exhibit C

Reserved Targets

[...***...]

Exhibit G

Ineligible Reserved Targets

[...***...]

Exhibit 99.1

Ultragenyx and Arcturus Therapeutics Expand Existing Research Collaboration and License Agreement to Develop Additional Nucleic Acid Therapies for Rare Diseases

- *Scope of the collaboration expands to include up to 12 rare disease targets and includes Arcturus nucleic acid technologies to enable mRNA, DNA, and siRNA therapeutics*
- *$30 million of upfront payments to Arcturus, including $6 million cash for collaboration agreement amendment and a $24 million equity investment at $10 per share*
- *Ultragenyx becomes Arcturus' largest shareholder; Karah Parschauer, J.D., General Counsel of Ultragenyx, joining Arcturus' Board of Directors and Emil D. Kakkis, M.D., Ph.D., Chief Executive Officer and President of Ultragenyx, joining as Arcturus Board Observer*

NOVATO, Calif., and SAN DIEGO, Calif., June 19, 2019 – Ultragenyx Pharmaceutical, Inc. (Nasdaq: RARE), a biopharmaceutical company focused on the development of novel products for serious rare and ultra-rare genetic diseases and Arcturus Therapeutics Holdings Inc. (Nasdaq: ARCT), a leading messenger RNA medicines company, today announced that they have expanded their collaboration to discover and develop mRNA, DNA and siRNA therapeutics for up to 12 rare disease targets.

"This expanded collaboration further solidifies our mRNA platform by adding additional targets and expanding our ability to potentially treat more diseases," said Emil D. Kakkis, M.D., Ph.D., Chief Executive Officer and President of Ultragenyx. "We are pleased with the progress of our ongoing collaboration. Our most advanced mRNA program, UX053 for the treatment of Glycogen Storage Disease Type III, is expected to move into the clinic next year, and we look forward to further building upon the initial success of this partnership."

"The expansion of the collaboration with Ultragenyx underscores the partnership's early successes and ongoing commitment," said Joseph Payne, President and Chief Executive Officer of Arcturus. "Our expertise in the discovery, early development and manufacturing of RNA medicines aligns well with Ultragenyx's proven clinical development and commercial experience in rare diseases." He further added, "We look forward to utilizing Ultragenyx's seasoned experience and presence on our Board of Directors to advance mRNA therapeutics as a new class of genetic medicines, and build Arcturus into a leading, independent biopharmaceutical company that delivers value to patients and shareholders."

In connection with the amendment to the license agreement, Ultragenyx made a $6 million cash upfront payment to Arcturus. Ultragenyx is also purchasing 2,400,000 shares of Arcturus' common stock at a stated value of $10 per share. Ultragenyx has an option to purchase an additional 600,000 shares of Arcturus' common stock at $16 per share. Ultragenyx will become Arcturus' largest shareholder with Karah Parschauer, J.D., General Counsel of Ultragenyx, joining Arcturus' Board of Directors and Emil D. Kakkis, M.D., Ph.D., Chief Executive Officer and President of Ultragenyx, joining as an Arcturus Board Observer.

Arcturus is entitled to preclinical, clinical, regulatory, and sales milestone payments for each product developed under the collaboration. Under the amended license agreement, certain early-stage milestone payments are reduced and the total potential milestone payments are increased due to the expanded number of targets. Arcturus is also entitled to reimbursement of related research expenses and royalties on commercial sales.

The original collaboration and license agreement between Ultragenyx and Arcturus was signed in October 2015. The two companies have been working together to develop mRNA therapeutic candidates for certain rare disease targets. The first disclosed indication under the collaboration is Glycogen Storage Disease Type III, and an Investigational New Drug (IND) application for this mRNA therapeutic program, UX053, is expected to be filed in 2020.

About Ultragenyx Pharmaceutical, Inc.
Ultragenyx is a biopharmaceutical company committed to bringing patients novel products for the treatment of serious rare and ultra-rare genetic diseases. The company has built a diverse portfolio of approved therapies and product candidates aimed at addressing diseases with high unmet medical need and clear biology for treatment, for which there are typically no approved therapies treating the underlying disease.

The company is led by a management team experienced in the development and commercialization of rare disease therapeutics. Ultragenyx's strategy is predicated upon time and cost-efficient drug development, with the goal of delivering safe and effective therapies to patients with the utmost urgency.

For more information on Ultragenyx, please visit the Company's website at www.ultragenyx.com.

About Arcturus Therapeutics Holdings Inc.
Founded in 2013 and based in San Diego, California, Arcturus Therapeutics Holdings Inc. (NASDAQ: ARCT) is an RNA medicines company with enabling technologies – LUNAR® lipid-mediated delivery and Unlocked Nucleomonomer Analog (UNA) chemistry – and mRNA drug substance along with drug product manufacturing. Arcturus' diverse pipeline of RNA therapeutics includes programs to potentially treat Ornithine Transcarbamylase (OTC) Deficiency, Cystic Fibrosis, Glycogen Storage Disease Type 3, Hepatitis B, and non-alcoholic steatohepatitis (NASH). Arcturus' versatile RNA therapeutics platforms can be applied toward multiple types of nucleic acid medicines including small interfering RNA, messenger RNA, replicon RNA, antisense RNA, microRNA, DNA, and gene editing therapeutics. Arcturus technologies are covered by its extensive patent portfolio (154 patents and patent applications, issued in the U.S., Europe, Japan, China and other countries). Arcturus' commitment to the development of novel RNA therapeutics has led to partnerships with Janssen Pharmaceuticals, Inc., part of the Janssen Pharmaceutical Companies of Johnson & Johnson, Ultragenyx Pharmaceutical, Inc., Takeda Pharmaceutical Company Limited, Synthetic Genomics Inc. and the Cystic Fibrosis Foundation. For more information, visit www.Arcturusrx.com.

Ultragenyx Forward-Looking Statements

Except for the historical information contained herein, the matters set forth in this press release, including statements related to Ultragenyx's expectations regarding plans for its clinical programs and clinical studies, future regulatory interactions, and the components and timing of regulatory submissions are forward-looking statements within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements involve substantial risks and uncertainties that could cause our clinical development programs, collaboration with, and investment, in Arcturus, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the uncertainties inherent in the clinical drug development process, such as the regulatory approval process, the timing of regulatory filings and approvals (including whether such approvals can be obtained), and other matters that could affect sufficiency of existing cash, cash equivalents and short-term investments to fund operations and the availability or commercial potential of our products and drug candidates. Ultragenyx undertakes no obligation to update or revise any forward looking statements. For a further description of the risks and uncertainties that could cause actual results to differ from those expressed in these forward-looking statements, as well as risks relating to the business of Ultragenyx in general, see Ultragenyx's Quarterly Report filed on Form 10-Q with the Securities and Exchange Commission on May 7, 2019, and its subsequent periodic reports filed with the Securities and Exchange Commission.

Arcturus Forward-Looking Statements

This press release contains forward-looking statements that involve substantial risks and uncertainties for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. Any statements, other than statements of historical fact, included in this press release regarding strategy, future operations, collaborations, future financial position, prospects, plans and objectives of management, the likelihood of success of the Company's technology or potential development of any products, the status of the preclinical development program for any of the clinical development programs of Arcturus, the status of IND-enabling studies and early clinical development related to any of the clinical development programs of Arcturus, the sufficiency of any drug substances or drug products of the Company to meet the Company's current clinical goals or expectations, the date that an IND may be filed with the FDA, the potential market or success for the clinical development programs of Arcturus, current standards of care, and the Company's future cash and financial position are forward-looking statements. Arcturus may not actually achieve the plans, carry out the intentions or meet the expectations or projections disclosed in any forward-looking statements such as the foregoing and you should not place undue reliance on such forward-looking statements. Actual results and performance could differ materially from those projected in any forward-looking statements as a result of many factors, including without limitation, an inability to develop and market product candidates, inability to generate positive verifiable data, unexpected clinical results, unforeseen expenses and general market conditions that may prevent such achievement or performance. Such statements are based on management's current expectations and involve risks and uncertainties, including those discussed under the heading "Risk Factors" in Arcturus' Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed with the SEC on March 18, 2019 and in subsequent filings with, or submissions to, the SEC. Except as otherwise required by law, Arcturus disclaims any intention or obligation to update or revise any forward-

looking statements, which speak only as of the date they were made, whether as a result of new information, future events or circumstances or otherwise.

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