

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

**FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

ARCTURUS THERAPEUTICS HOLDINGS INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

32-0595345
(I.R.S. Employer
Identification No.)

10628 Science Center Drive, Suite 250
San Diego, California 92121
(858) 900-2660

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

Joseph E. Payne
Arcturus Therapeutics Holdings Inc.
10628 Science Center Drive, Suite 250
San Diego, California 92121
(858) 900-2660

(Name, address, including zip code, and telephone number, including area code of agent for service)

With a copy to:

Jeffrey A. Baumel, Esq.
Ilan Katz, Esq.
Dentons US LLP
1221 Avenue of the Americas
New York, NY 10020-1089
Telephone: (212) 768-6700

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

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

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

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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

Large accelerated filer	<input type="checkbox"/>		Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>		Smaller reporting company	<input checked="" type="checkbox"/>
			Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Unit(1)(2)	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee(2)
Common Stock	2,400,000	\$10.60	\$25,440,000.00	\$3,302.11

(1) In addition, there are being registered hereunder such additional number of shares of common stock, of a currently indeterminable amount, as may from time to time become issuable by reason of stock splits, stock dividends or similar transactions, which shares of common stock are registered hereunder pursuant to Rule 416 of the Securities Act of 1933, as amended (the "Securities Act").

(2) Estimated in accordance with Rule 457(c) of the Securities Act solely for purposes of calculating the registration fee based on the average high and low prices reported for the registrant's common stock traded on the Nasdaq Global Market on December 6, 2019.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with section 8(a) of the Securities Act or until this Registration Statement shall become effective on such date as the Commission acting pursuant to said section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The selling stockholder may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED DECEMBER 12, 2019.

PROSPECTUS



2,400,000 shares of Common Stock

This prospectus relates to up to 2,400,000 shares of common stock that the selling stockholder identified in this prospectus may sell from time to time in one or more transactions in amounts, at prices and on terms that will be determined at the time of the offering. We will not receive any proceeds from the sale of the shares of common stock by the selling stockholder. The selling stockholder acquired the shares of common stock from us pursuant to an Equity Purchase Agreement dated June 19, 2019.

The shares of common stock may be sold directly by the selling stockholder on the Nasdaq Global Market or any other stock exchange, market or trading facility on which the shares of common stock are traded or in private transactions. This prospectus describes the general manner in which the shares may be offered and sold by the selling stockholder. If necessary, the specific manner in which the shares may be offered and sold will be described in a supplement to this prospectus. Any such prospectus supplement may also add, update or change information in this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with this offering. You should carefully read this prospectus, any applicable prospectus supplement and any related free writing prospectuses, as well as the documents incorporated by reference or deemed to be incorporated by reference into this prospectus, carefully before you invest. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus.

Our common stock is traded on the Nasdaq Global Market under the symbol "ARCT." On December 11, 2019, the closing price of our common stock on the Nasdaq Global Market was \$10.85 per share.

Investing in our common stock involves a high degree of risk. You should review carefully the risks and uncertainties referenced under the heading "[Risk Factors](#)" on page 4 of this prospectus and contained in our filings made with the Securities and Exchange Commission and any applicable prospectus supplement.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ACCURACY OR ADEQUACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this prospectus is _____, 2019.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or the SEC, utilizing a “shelf” registration process. This prospectus describes the general manner in which the selling stockholder identified in this prospectus may offer from time to time in one or more transactions up to 2,400,000 shares of our common stock.

This prospectus only provides you with a general description of the common stock that may be sold in these transactions. If necessary, the specific manner in which the shares of common stock may be offered and sold will be described in a supplement to this prospectus, which supplement may also add, update or change any of the information contained in this prospectus. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to this offerings. This prospectus does not contain all of the information included in the registration statement we filed with the SEC. For further information about us or the common stock offered hereby, you should carefully read this prospectus, any applicable prospectus supplement, any related free writing prospectuses, the information and documents incorporated herein by reference and the additional information under the heading “Where You Can Find More Information” before making an investment decision.

You should rely only on the information contained or incorporated by reference in this prospectus, any applicable prospectus supplement and any related free writing prospectuses that we may authorize to be provided to you. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. **This prospectus and any accompanying supplement to this prospectus are not an offer to sell the common stock and it is not soliciting an offer to buy the common stock in any jurisdiction where the offer or sale is not permitted.** You should assume that the information appearing in this prospectus, any applicable prospectus supplement or any related free writing prospectuses, as well as information we have previously filed with the SEC, and incorporated by reference, is accurate only as of the date on the cover of those documents. If any statement in one of these documents is inconsistent with a statement in another document having a later date-for example, a document incorporated by reference in this prospectus-the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates. To the extent there are inconsistencies between any prospectus supplement, this prospectus and/or any documents incorporated by reference, the document with the most recent date will control.

PROSPECTUS SUMMARY

Unless otherwise indicated or the context otherwise requires, the terms the “Company,” “Arcturus Therapeutics,” “we,” “us” and “our” refer to Arcturus Therapeutics Holdings Inc., a Delaware corporation, and its predecessors and consolidated subsidiaries.

Business Overview of Arcturus Therapeutics Holdings Inc.

Arcturus Therapeutics is an RNA medicines company focused on significant opportunities in rare diseases with a current focus on liver and respiratory diseases. In addition to our internal mRNA platform, our proprietary lipid nanoparticle deliver system, LUNAR[®], enables multiple nucleic acid medicines. We have deep expertise in the discovery and development of RNA medicines, including key experience in the production of RNA drug substance and nanoparticle-formulated drug product.

- We have a pipeline of seven drugs in late-stage discovery and early-stage development: two wholly-owned and five pharma partnered programs.
- We have developed a novel lipid-mediated delivery technology platform called LUNAR[®] which draws from a growing library of over 150 proprietary lipids intended to enable safer and more efficient delivery of RNA medicines.
- Our wholly-owned, LUNAR[®] and nucleic acid technologies are covered by a patent portfolio of 152 patents and patent applications, issued in the United States, China, Europe, Japan and other countries.

The Company’s principal executive offices are located in San Diego, California. Our key proprietary technology has the potential to address the major hurdles in RNA development, namely the effective and safe delivery of RNA therapeutics to disease-relevant target tissues. We believe the versatility of our platform to target multiple tissues, its compatibility with various nucleic acid therapeutics, and our expertise in developing scalable manufacturing processes puts us in a good position to deliver on the next generation of nucleic medicines.

We believe that we can use our proprietary technologies to develop RNA medicines in multiple therapeutic approaches: (1) mRNA, DNA, and replicon protein replacement for therapeutics and protein delivery for vaccines; (2) siRNA, microRNA, and antisense oligonucleotides—knockdown of genes overexpressed in disease; and (3) CRISPR, TALEN, zinc finger proteins, megatalas and meganucleases—gene editing of errant genes.

Corporate Information

The Company was founded in 2013 under the name Alcobra Ltd. On November 15, 2017, Alcobra Ltd. acquired Arcturus Therapeutics, Inc. or Arcturus Inc., pursuant to a merger between the companies. Immediately after giving effect to the merger, on November 15, 2017, Alcobra Ltd. changed its name to Arcturus Therapeutics Ltd., or Arcturus Ltd.

On June 12, 2019, Arcturus Ltd. redomiciled as a Delaware corporation following the completion of the actions contemplated by an Exchange Agreement dated as of February 8, 2019, between Arcturus Ltd. and the Company. Following the redomiciliation, the Company became the successor issuer to Arcturus Ltd. and each of Arcturus Ltd. and Arcturus Inc. became wholly-owned subsidiaries of the Company.

Our principal executive offices are located at 10628 Science Center Drive, Suite 250, San Diego, California 92121, and our telephone number is (858) 900-2660. Our website is located at <https://arcturusrx.com>. We do not incorporate by reference into this prospectus the information on, or accessible through, our website, and you should not consider it as part of this prospectus or any prospectus supplement. Our common stock trades on the Nasdaq Global Market, or Nasdaq, under the symbol “ARCT”.

ABOUT THIS OFFERING

This prospectus relates to the resale by the selling stockholder identified in this prospectus of up to 2,400,000 shares of our common stock. All of the shares, when sold, will be sold by this selling stockholder. The selling stockholder may sell its shares of common stock from time to time at prevailing market prices. We will not receive any proceeds from the sale of the shares of common stock by the selling stockholder.

Common Stock Offered: Up to 2,400,000 shares of common stock.

Common Stock Outstanding at December 11, 2019: 15,137,964 shares.

Use of Proceeds: We will not receive any proceeds from the sale of the 2,400,000 shares of common stock by the selling stockholder under this prospectus.

Risk Factors: An investment in the common stock offered under this prospectus involves a high degree of risk. See “Risk Factors” beginning on page 4 of this prospectus and in the documents incorporated by reference into this prospectus for a discussion of factors you should consider carefully when making an investment decision.

Nasdaq Symbol: ARCT

The number of shares outstanding excludes, as of December 11, 2019:

- 1,649,076 shares of common stock issuable upon the exercise of outstanding stock options under our 2019 equity incentive plan; and
- 927,457 shares of common stock available for future grants under our 2019 equity incentive plan.

RISK FACTORS

Investment in our common stock involves risks. Prior to making a decision about investing in our common stock, you should consider carefully all of the information included in and incorporated by reference or deemed to be incorporated by reference in this prospectus or the applicable prospectus supplement, including the risk factors incorporated by reference herein from our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 18, 2019 by our predecessor company, Arcturus Therapeutics Ltd., and amended on April 10, 2019, as updated by annual, quarterly and other reports and documents we file with the SEC after the date of this prospectus and that are incorporated by reference herein or in any applicable prospectus supplement or any free writing prospectus. Each of these risk factors could have a material adverse effect on our business, results of operations, financial position or cash flows, which may result in the loss of all or part of your investment. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently consider immaterial may also impair our business operations. If any of these risks actually occur, our business and financial results could be harmed. In that case, the trading price of our common stock or other securities could decline. To the extent a particular offering implicates additional known material risks, we will include a discussion of those risks in the applicable prospectus supplement.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference into this prospectus contain certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, in reliance upon the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include, without limitation, statements regarding the success, safety and efficacy of our drug products, product approvals, product sales, revenues, development timelines, product acquisitions, liquidity and capital resources and trends, and other statements containing forward-looking words, such as, “believes,” “may,” “could,” “would,” “will,” “expects,” “intends,” “estimates,” “anticipates,” “plans,” “seeks,” or “continues” or the negative thereof or variation thereon or similar terminology (although not all forward-looking statements contain these words). Such forward-looking statements are based on the beliefs of our management as well as assumptions made by and information currently available to our management. Readers should not put undue reliance on these forward-looking statements because they involve known and unknown risks, uncertainties and other factors, some of which are beyond our control. These risks, uncertainties and other factors may cause our actual results, performance or achievements to be materially different from the anticipated future results, performance or achievements expressed or implied by the forward-looking statements.

Factors that might cause these differences include the following:

- the initiation, cost, timing, progress and results of, and our expected ability to undertake certain activities and accomplish certain goals with respect to, our research and development activities, preclinical studies and clinical trials;
- our ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations, and/or warnings in the label of an approved product candidate;
- our ability to obtain and deploy funding for our operations;
- our ability to continue as a going concern;
- our plans to research, develop and commercialize our product candidates;
- our strategic alliance partners’ election to pursue development and commercialization of any programs or product candidates that are subject to our collaboration and license agreements with such partners;

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- our ability to attract collaborators with relevant development, regulatory and commercialization expertise;
- future activities to be undertaken by our strategic alliance partners, collaborators and other third parties;
- our ability to avoid, settle or be victorious at costly litigation with shareholders, former executives or others;
- our ability to obtain and maintain intellectual property protection for our product candidates;
- the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- our ability to successfully commercialize, and our expectations regarding future therapeutic and commercial potential with respect to, our product candidates;
- the rate and degree of market acceptance of our product candidates;
- our ability to develop sales and marketing capabilities, whether alone or with potential future collaborators;
- regulatory developments in the United States and foreign countries;
- our ability to attract and retain experienced and seasoned scientific and management professionals to lead our company;
- the performance of our third-party suppliers and manufacturers;
- the success of competing therapies that are or may become available; and
- the accuracy of our estimates regarding future expenses, future revenues, capital requirements and need for additional financing.

We urge you to consider these factors carefully in evaluating the forward-looking statements contained in this prospectus and any applicable prospectus supplement. All subsequent written or oral forward-looking statements attributable to our company or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. The forward-looking statements included in this prospectus are made only as of the date of this prospectus. We undertake no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise, except to the extent that we are required to do so by law.

USE OF PROCEEDS

We will not receive any proceeds from the sale of the 2,400,000 shares of common stock by the selling stockholder under this prospectus.

We will incur all costs associated with the preparation and filing of the registration statement of which this prospectus is a part. Brokerage fees, commissions and similar expenses, if any, attributable to the sale of shares offered hereby will be borne by the selling stockholder.

SELLING STOCKHOLDER

The selling stockholder, Ultragenyx Pharmaceutical Inc., or Ultragenyx, acquired the common stock being registered for resale pursuant to this prospectus, pursuant to an Equity Purchase Agreement, or the Equity Agreement, between us and the selling stockholder dated as of June 18, 2019, pursuant to which we sold to the selling stockholder on June 19, 2019 an aggregate of 2,400,000 shares of our common stock at a price of \$10.00 per share and granted to the selling stockholder a two-year right to purchase up to 600,000 additional shares of our common stock at a price of \$16.00 per share, or the Additional Shares. In the event the purchase of the Additional Shares would result in the selling stockholder 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 selling stockholder shall only be entitled to purchase that number of Additional Shares that would result in the selling stockholder and its affiliates owning a number of shares of common stock equal to 19.99% of the then-issued and outstanding shares of common stock immediately after giving effect to such purchase. In the event that the selling stockholder is not permitted to purchase all of the Additional Shares, (A) the expiration date shall be extended until the earlier of (x) such time as the selling stockholder may purchase any remaining portion of the Additional Shares and (y) the fourth anniversary of the closing date.

Pursuant to the terms of the Equity Agreement, until the later of (i) June 19, 2020 or (ii) the date on which the selling stockholder beneficially owns less than 8.0% of our total voting power, at each annual stockholders meeting or any stockholders meeting at which members of the Board of Directors are to be elected, we must nominate one director designated by the selling stockholder, or the Designee. Additionally, the Designee is required to be appointed to all Board committees (subject to applicable Nasdaq rules). The selling stockholder also has the right to have the chief executive officer of the selling stockholder attend Board meetings as a non-voting observer. Our director, and the executive vice president and general counsel of Ultragenyx, Karah Parschauer is the initial Designee.

Pursuant to the Equity Agreement, the selling stockholder agreed to certain standstill provisions and restrictions on transfer of the shares of common stock. The standstill provisions and transfer restrictions last until June 19, 2021, and may terminate earlier upon the occurrence of certain events set forth in the Equity Agreement.

Also on June 18, 2019, we and the selling stockholder entered into a Third Amendment, or 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 us and the selling stockholder 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 the selling stockholder with the right to identify a total of ten rare disease targets to be reserved for future collaborative development with us, which expands this program from 8 to 10 total reserved rare disease targets. The Amendment also clarifies certain obligations of us and the selling stockholder 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 the selling stockholder to exercise options and extend reserve target exclusivity. In connection with the Amendment, the selling stockholder made a one-time payment to us 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 the selling stockholder could be reduced based on our and third parties' intellectual property coverage over a developed product.

We entered into a registration rights agreement with the selling stockholder on June 18, 2019, under which we agreed to file the registration statement of which this prospectus forms a part covering the resale of the shares of common stock sold to the selling stockholder by December 15, 2019. In connection therewith, we also granted the selling stockholder certain "piggy-back" registration rights with respect to registration statements that we may file in the future.

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Other than the relationships described herein, to our knowledge, the selling stockholder and its affiliates are not employees or suppliers of ours or our affiliates. Within the past three years, other than the relationships described herein, neither the selling stockholder nor any of its affiliates have held a position as an officer a director of ours, nor has the selling stockholder had any material relationship of any kind with us or any of our affiliates. All information with respect to share ownership has been furnished by the selling stockholder. The shares being offered are being registered to permit public secondary trading of such shares and the selling stockholder may offer all or part of the shares it owns for resale from time to time in one or more transactions pursuant to this prospectus. To our knowledge, neither the selling stockholder nor its affiliates has any family relationships with our officers, other directors or controlling stockholders.

If the selling stockholder is an affiliate of broker-dealers, it and any participating broker-dealers are deemed to be “underwriters” within the meaning of the Securities Act, and any commissions or discounts given to the selling stockholder or broker-dealer may be regarded as underwriting commissions or discounts under the Securities Act.

The term “selling stockholder” also includes any transferees, pledgees, donees, or other successors in interest to the selling stockholder named in the table below. To our knowledge, the selling stockholder has sole voting and investment power with respect to the shares of common stock set forth opposite the selling stockholder’s name. We will file a supplement to this prospectus (or a post-effective amendment hereto, if necessary) to name successors to any named selling stockholder who is able to use this prospectus to resell the common stock registered hereby.

<u>Name of Selling Stockholder</u>	<u>Shares Beneficially Owned Before the Offering(1)</u>		<u>Maximum Number of Shares to be Offered in the Offering</u>	<u>Number of Shares Beneficially Owned Immediately After Sale of Maximum Number of Shares in the Offering(1)(2)</u>	
	<u>Number</u>	<u>Percentage(3)</u>		<u>Number</u>	<u>Percentage(3)</u>
Ultragenyx Pharmaceutical Inc.(4)	3,000,000	19.06%	2,400,000	600,000	3.81%

- (1) Beneficial ownership is determined in accordance with SEC rules and generally includes voting or investment power with respect to securities. Shares of common stock subject to warrants, options or rights currently exercisable, or exercisable within 60 days of December 11, 2019 are counted as beneficially owned by the selling stockholder.
- (2) Assumes all of the shares of common stock offered are sold.
- (3) Based on 15,137,964 shares of our common stock outstanding on December 11, 2019 and 600,000 shares to be issued upon exercise of the Additional Shares.
- (4) Based on a Schedule 13D filed with the SEC on June 26, 2019. Ownership consists of (i) 2,400,000 shares and (ii) 600,000 shares currently issuable pursuant to the Equity Agreement between the Company and Ultragenyx Pharmaceutical Inc. The address of Ultragenyx Pharmaceutical Inc. is 60 Leveroni Court, Novato, California 94949.

We may require the selling stockholder to suspend the sales of the common stock offered by this prospectus upon the occurrence of any event that makes any statement in this prospectus or the related registration statement untrue in any material respect or that requires the changing of statements in these documents in order to make statements in those documents not misleading.

Information concerning the selling stockholder may change from time to time and any changed information will be set forth in prospectus supplements if and when necessary.

PLAN OF DISTRIBUTION

We are registering the shares of common stock on behalf of the selling stockholder. The selling stockholder and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of the common stock covered hereby on the Nasdaq Global Market or any other stock exchange, market or trading facility on which the common stock is 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. The selling stockholder may use any one or more of the following methods when selling common stock:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the common stock 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 stockholder to sell a specified number of such common stock 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 stockholder may also sell common stock under Rule 144 or any other exemption from registration under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the selling stockholder may arrange for other broker-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholder (or, if any broker-dealer acts as agent for the purchaser of common stock, 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 common stock or interests therein, the selling stockholder may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the common stock in the course of hedging the positions they assume. The selling stockholder may also sell common stock short and deliver the common stock to close out their short positions, or loan or pledge the common stock to broker-dealers that in turn may sell the common stock. The selling stockholder 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 common stock offered by this prospectus, which common stock such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The selling stockholder and any broker-dealers or agents that are involved in selling the common stock 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 common stock purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. The selling stockholder has informed us that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the common stock.

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We are required to pay certain fees and expenses incurred by us incident to the registration of the common stock. We have agreed to indemnify the selling stockholder against certain losses, claims, damages and liabilities, including liabilities under the Securities Act. We will not receive any proceeds from the sale of the shares by the selling stockholder.

We agreed to keep this prospectus effective until the earlier of (i) following the date in which selling stockholder has acquired all of the Additional Shares under the Equity Agreement or the selling stockholder's right to acquire the Additional Shares under the Equity Agreement has terminated, the date that the common stock may be resold by the selling stockholder without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for us 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 common stock has been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale common stock 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 common stock 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 common stock 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 stockholder 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 stockholder or any other person. We will make copies of this prospectus available to the selling stockholder 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).

LEGAL MATTERS

The validity of the common stock being offered hereby will be passed on by Dentons US LLP.

EXPERTS

The consolidated financial statements of Arcturus Therapeutics Ltd. at December 31, 2018, and for the year ended December 31, 2018, appearing in Arcturus Therapeutics Ltd.'s Annual Report (Form 10-K) for the year ended December 31, 2018, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon (which contains an explanatory paragraph describing conditions that raise substantial doubt about the Company's ability to continue as a going concern as described in Note 1 to the consolidated financial statements), included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

The consolidated financial statements of Arcturus Therapeutics Ltd. at December 31, 2017, and for year then ended, have been audited by Kost Forer Gabbay and Kasierer, a member of Ernst & Young Global, independent registered public accounting firm, as set forth in their report thereon and incorporated by reference herein. Such consolidated financial statements are incorporated herein by reference in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy and information statements and other information with the SEC. This prospectus is part of a registration statement that we have filed with the SEC relating to the common stock that may be offered under this prospectus. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the common stock that may be offered under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement.

The SEC maintains an internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, where you may read and copy the registration statement, as well as our reports, proxy and information statements and other information. The address of the SEC's web site is <http://www.sec.gov>.

Copies of certain information filed by us with the SEC are also available on our website at <https://arcturusrx.com>. Information contained in or accessible through our website does not constitute a part of this prospectus and is not incorporated by reference in this prospectus.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The SEC allows us to "incorporate by reference" information into this prospectus. This means that we can disclose important information about us and our financial condition to you by referring you to another document filed separately with the SEC. The information incorporated by reference is considered to be part of this prospectus. This prospectus incorporates by reference the documents listed below that have been previously filed with the SEC by us or our predecessor, Arcturus Therapeutics Ltd.:

- the Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2018, as filed with the SEC on March 18, 2019 by Arcturus Therapeutics Ltd. and as amended on [April 10, 2019](#);

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- the Quarterly Report on Form 10-Q for the quarter ended [March 31, 2019](#) filed by Arcturus Therapeutics Ltd. with the SEC on May 13, 2019, and the Quarterly Reports on Form 10-Q for the quarters [June 30, 2019](#) and [September 30, 2019](#), filed by us with the SEC on August 14, 2019 and November 8, 2019, respectively;
- the Current Reports on Form 8-K filed by Arcturus Therapeutics Ltd. with the SEC on [February 11, 2019](#) and [May 20, 2019](#), and the Current Reports on Form 8-K filed by us with the SEC on [June 14, 2019](#), [June 20, 2019](#), [July 29, 2019](#), [August 1, 2019](#), [August 2, 2019](#), [August 5, 2019](#), [September 16, 2019](#), [September 23, 2019](#), [September 27, 2019](#) and [October 31, 2019](#) (in each case, except for information contained therein which is furnished rather than filed); and
- the description of our common stock set forth in the registration statement on Form 8-A registering our common stock under Section 12 of the Exchange Act, which was filed with the SEC by Arcturus Therapeutics Ltd. on [May 17, 2013](#), including any amendments or reports filed for purposes of updating such description, including the Form 8-K12B filed by us with the SEC on [June 14, 2019](#).

We also incorporate by reference into this prospectus all documents filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (1) after the date of the filing of the registration statement of which this prospectus forms a part and prior to its effectiveness and (2) prior to the termination of any offering of common stock made by this prospectus. Nothing in this prospectus shall be deemed to incorporate information furnished but not filed with the SEC (including without limitation, information furnished under Item 2.02 or Item 7.01 of Form 8-K, and any exhibits relating to such information).

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

You may request a copy of the filings incorporated herein by reference, including exhibits to such documents that are specifically incorporated by reference, at no cost, by writing or calling us at the following address or telephone number:

Arcturus Therapeutics Holdings Inc.
10628 Science Center Drive, Suite 250
San Diego, California 92121
Telephone: (858) 900-2660
Attention: Investor Relations

Statements contained in this prospectus as to the contents of any contract or other documents are not necessarily complete, and in each instance investors are referred to the copy of the contract or other document filed as an exhibit to the registration statement, each such statement being qualified in all respects by such reference and the exhibits and schedules thereto.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth all costs and expenses payable by us in connection with the sale of the common stock being registered hereunder. All of the amounts shown shall be paid by us and are estimates except for the SEC registration fee.

SEC Registration Fee	\$ 3,302.11
Accounting Fees and Expenses	\$ 20,000.00
Legal Fees and Expenses	\$ 30,000.00
Miscellaneous	\$ 2,000.00
Total	<u>\$ 55,302.11</u>

Item 15. Indemnification of Directors and Officers.

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

Section 145(b) of the DGCL provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that such person is or was a director, officer, employee or agent of the corporation, or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, joint venture, trust or other enterprise, against expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation, except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation, unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the court shall deem proper.

Further subsections of DGCL Section 145 provide that:

(1) to the extent a present or former director or officer of a corporation has been successful on the merits or otherwise in the defense of any action, suit or proceeding referred to in subsections (a) and (b) of Section 145 or in the defense of any claim, issue or matter therein, such person shall be indemnified against expenses, including attorneys' fees, actually and reasonably incurred by such person in connection therewith;

(2) the indemnification and advancement of expenses provided for pursuant to Section 145 shall not be deemed exclusive of any other rights to which those seeking indemnification or advancement of expenses may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise; and

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(3) the corporation shall have the power to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would have the power to indemnify such person against such liability under Section 145.

Section 145 of the DGCL makes provision for the indemnification of officers and directors in terms sufficiently broad to indemnify our officers and directors under certain circumstances from liabilities (including reimbursement for expenses incurred) arising under the Securities Act of 1933. Our bylaws provide, in effect, that, to the fullest extent and under the circumstances permitted by Section 145 of the DGCL, we will indemnify any person (and the estate of any person) who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he or she is or was a director or officer of our company or is or was serving at our request as a director or officer of another corporation or enterprise. We may, in our discretion, similarly indemnify its employees and agents.

We have entered into indemnification agreements with our officers and directors.

Our certificate of incorporation relieves our directors from monetary damages to us or our stockholders for breach of such director's fiduciary duty as a director to the fullest extent permitted by the DGCL. Under Section 102(b)(7) of the DGCL, a corporation may relieve its directors from personal liability to such corporation or its stockholders for monetary damages for any breach of their fiduciary duty as directors except (i) for a breach of the duty of loyalty, (ii) for acts or omissions not in good faith, or which involve intentional misconduct or a knowing violation of law, (iii) for willful or negligent violations of certain provisions in the DGCL imposing certain requirements with respect to stock repurchases, redemptions and dividends, or (iv) for any transactions from which the director derived an improper personal benefit.

We currently maintain an insurance policy which, within the limits and subject to the terms and conditions thereof, covers certain expenses and liabilities that may be incurred by directors and officers in connection with proceedings that may be brought against them as a result of an act or omission committed or suffered while acting as a director or officer of our company.

Item 16. Exhibits.

See the Exhibit Index attached to this registration statement and incorporated herein by this reference.

Item 17. Undertakings.

(a) The undersigned registrant hereby undertakes:

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

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

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

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

Provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is a part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

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

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

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

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrants pursuant to the foregoing provisions described in Item 15, or otherwise, the registrants have been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrants of expenses incurred or paid by a director, officer or controlling person of any registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, each appropriate registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Exhibit</u>
5.1+	Opinion of Dentons US LLP
10.1	Equity Purchase Agreement, dated as of June 18, 2019 (incorporated by reference to the Company's Current Report on Form 8-K filed on June 20, 2019)
23.1+	Consent of Independent Registered Public Accounting Firm
23.2+	Consent of Independent Registered Public Accounting Firm
23.3+	Consent of Dentons US LLP (contained in Exhibit 5.1)
24.1+	Power of Attorney

+ Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on December 9, 2019.

ARCTURUS THERAPEUTICS HOLDINGS INC.

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

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Joseph E. Payne and Dr. Padmanabh Chivukula, and each of them acting individually, as his or her true and lawful attorneys-in-fact and agent, with full power of each to act alone, with full powers of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this registration statement (including post-effective amendments and any registration statement for the same offering that is to be effective under Rule 462(b) of the Securities Act), and to file the same with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents, or any of them or their substitute or resubstitute, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
<u>/s/ Joseph E. Payne</u> Joseph E. Payne	President, Chief Executive Officer (<i>principal executive officer</i>)	December 9, 2019
<u>/s/ Padmanabh Chivukula</u> Dr. Padmanabh Chivukula	Chief Scientific Officer, Chief Operating Officer and Secretary	December 9, 2019
<u>/s/ Peter Farrell</u> Dr. Peter Farrell	Chairman of the Board	December 9, 2019
<u>/s/ Andy Sassine</u> Andy Sassine	Chief Financial Officer and Director (<i>principal financial officer</i>)	December 9, 2019
<u>/s/ James Barlow</u> James Barlow	Director	December 9, 2019
<u>/s/ Edward Holmes</u> Dr. Edward Holmes	Director	December 9, 2019

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Signature	Title	Date
<hr/> <u>/s/ Magda Marquet</u> Dr. Magda Marquet	Director	December 9, 2019
<hr/> <u>/s/ Karah Parschauer</u> Karah Parschauer	Director	December 9, 2019
<hr/> <u>/s/ Keith Kummerfeld</u> Keith C. Kummerfeld	Vice President of Finance and Corporate Controller <i>(principal accounting officer)</i>	December 11, 2019

December 12, 2019

Arcturus Therapeutics Holdings Inc.
10628 Science Center Drive, Suite 250
San Diego, CA 92121

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to Arcturus Therapeutics Holdings Inc., a Delaware corporation (the “**Company**”), in connection with a registration statement on Form S-3 (the “**Registration Statement**”), being filed by the Company with the Securities and Exchange Commission under the Securities Act of 1933, as amended (the “**Act**”), for the registration of the re-sales of 2,400,000 shares of the Company’s common stock, \$0.001 par value per share (the “**Shares**”), such Shares to be offered and sold from time to time by the selling stockholder listed in the Registration Statement under the heading “Selling Stockholder.”

This opinion is being delivered to you pursuant to Item 601(b)(5) of Regulation S-K under the Act at the request of the Company.

In connection with rendering this opinion, we have examined originals, certified copies or copies otherwise identified as being true copies of the following: (i) the Company’s Certificate of Incorporation, (ii) the Company’s By-Laws, (iii) the Registration Statement, (iv) corporate proceedings of the Company relating to the Shares, and (v) such other instruments and documents as we have deemed necessary under the circumstances.

We have assumed the genuineness and authenticity of all documents examined by us and all signatures thereon, and the conformity to originals of all copies of documents examined by us.

Based upon the foregoing, and in reliance thereon, and subject to the qualifications, limitations and exceptions stated herein, we are of the opinion having due regard for such legal considerations as we deemed relevant, that the Shares have been validly issued, fully paid and are nonassessable.

Our opinions are subject to the effect of federal and state bankruptcy, insolvency, reorganization, arrangement, moratorium, fraudulent conveyance and other laws relating to or affecting the rights of secured or unsecured creditors generally (or affecting the rights of only creditors of specific types of debtors), with respect to which we express no opinion.

Our opinions are subject to limitations imposed by general principles of equity or public policy upon the enforceability of any of the remedies or covenants, including, without limitation, concepts of materiality, good faith and fair dealing and upon the availability of injunctive relief or other equitable remedies, and the application of principles of equity (regardless of whether enforcement is considered in proceedings at law or in equity).

We express no opinion as to the laws of any jurisdiction other than Delaware general corporation law and the federal laws of the United States of America.

We hereby consent to the inclusion of this opinion as Exhibit 5.1 to the Registration Statement and to the references to our firm under the caption "Legal Matters" in the Registration Statement. In giving our consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations thereunder.

Very truly yours,

/s/ Dentons US LLP

Dentons US LLP

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption “Experts” in the Registration Statement (Form S-3) and related Prospectus of Arcturus Therapeutics Holdings Inc. for the registration of 2,400,000 shares of its common stock and to the incorporation by reference therein of our report dated March 15, 2019, with respect to the consolidated financial statements of Arcturus Therapeutics Ltd. and its subsidiaries included in its Annual Report (Form 10-K) for the year ended December 31, 2018, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

San Diego, California
December 12, 2019

CONSENT OF INDEPENDENT REGISTERED ACCOUNTING FIRM

We consent to the reference to our firm under the caption “Experts” in the Registration Statement (Form S-3) and related prospectus of Arcturus Therapeutics Holdings Inc. for the registration of 2,400,000 shares of its common stock and to the incorporation by reference therein of our reports dated May 14, 2018, with respect to the consolidated financial statements of Arcturus Therapeutics Ltd. and its subsidiaries included in its Annual Report (Form 10-K) for the year ended December 31, 2018, filed with the Securities and Exchange Commission.

Tel-Aviv, Israel
December 12, 2019

/s/ KOST FORER GABBAY & KASIERER
A member of Ernst & Young global