UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2020

OR

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

For the transition period from to

Commission File Number: 001-38942

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** **(Address of principal executive offices)**	**92121** **(Zip Code)**

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

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

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

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

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of November 2, 2020, the registrant had 24,493,084 shares of voting common stock outstanding.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES

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Item 1. Financial Statements.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except par value information)

	September 30, 2020 (unaudited)	December 31, 2019
Assets		
Current assets:		
Cash and cash equivalents	$ 307,023	$ 71,353
Accounts receivable	2,447	2,179
Prepaid expenses and other current assets	4,630	758
Total current assets	314,100	74,290
Property and equipment, net	3,451	2,349
Operating lease right-of-use asset, net	4,862	5,134
Equity-method investment	—	263
Non-current restricted cash	107	107
Total assets	$ 322,520	$ 82,143
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 6,478	$ 5,793
Accrued liabilities	15,838	7,134
Deferred revenue	5,698	8,397
Total current liabilities	28,014	21,324
Deferred revenue, net of current portion	13,645	15,182
Long-term debt	15,076	14,995
Operating lease liability, net of current portion	4,155	4,850
Total liabilities	$ 60,890	$ 56,351
Stockholders' equity		
Common stock: $0.001 par value; 30,000 shares authorized; 24,473 and 15,138 issued and outstanding at September 30, 2020 and December 31, 2019, respectively.	25	15
Additional paid-in capital	374,317	97,445
Accumulated deficit	(112,712)	(71,668)
Total stockholders' equity	261,630	25,792
Total liabilities and stockholders' equity	$ 322,520	$ 82,143

The accompanying notes are an integral part of these condensed consolidated financial statements.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(unaudited)
(in thousands, except per share data)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Collaboration revenue	$ 2,333	$ 3,318	$ 7,301	$ 17,821
Operating expenses:				
Research and development, net	17,699	7,053	33,560	21,646
General and administrative	5,572	3,881	14,183	10,871
Total operating expenses	23,271	10,934	47,743	32,517
Loss from operations	(20,938)	(7,616)	(40,442)	(14,696)
Loss from equity-method investment	—	303	(263)	15
Finance expense, net	(66)	(120)	(339)	(321)
Net loss	$ (21,004)	$ (7,433)	$ (41,044)	$ (15,002)
Net loss per share, basic and diluted	$ (0.92)	$ (0.56)	$ (2.19)	$ (1.33)
Weighted-average shares outstanding, basic and diluted	22,938	13,201	18,766	11,248
Comprehensive loss:				
Net loss	$ (21,004)	$ (7,433)	$ (41,044)	$ (15,002)
Comprehensive loss	$ (21,004)	$ (7,433)	$ (41,044)	$ (15,002)

The accompanying notes are an integral part of these condensed consolidated financial statements.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(unaudited)
in thousands

Three Months Ended September 30, 2020

	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
BALANCE - June 30, 2020	**20,610**	**$ 21**	**$ 185,110**	**$ (91,708)**	**$ 93,423**
Net loss	—	—	—	(21,004)	(21,004)
Issuance of common stock, net of issuance costs	3,754	4	186,574	—	186,578
Issuance of common stock upon exercise of stock options	109	—	645	—	645
Share-based compensation	—	—	1,988	—	1,988
BALANCE – September 30, 2020	**24,473**	**$ 25**	**$ 374,317**	**$ (112,712)**	**$ 261,630**

Three Months Ended September 30, 2019

	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
BALANCE - June 30, 2019	**13,120**	**$ 13**	**$ 74,851**	**$ (53,246)**	**$ 21,618**
Net loss	—	—	—	(7,433)	(7,433)
Share-based compensation	—	—	383	—	383
Issuance of common stock, net of issuance costs	1,995	2	21,276	—	21,278
Issuance of common stock upon exercise of stock options	11	—	49	—	49
BALANCE – September 30, 2019	**15,126**	**$ 15**	**$ 96,559**	**$ (60,679)**	**$ 35,895**

Nine Months Ended September 30, 2020

	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
BALANCE - December 31, 2019	**15,138**	**$ 15**	**$ 97,445**	**$ (71,668)**	**$ 25,792**
Net loss	—	—	—	(41,044)	(41,044)
Issuance of common stock, net of issuance costs	8,489	9	261,874	—	261,883
Issuance of common stock to Ultragenyx on option exercise	600	1	9,599	—	9,600
Issuance of common stock upon exercise of stock options	246	—	1,461	—	1,461
Share-based compensation	—	—	3,938	—	3,938
BALANCE – September 30, 2020	**24,473**	**$ 25**	**$ 374,317**	**$ (112,712)**	**$ 261,630**

Nine Months Ended September 30, 2019

	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
BALANCE – December 31, 2018	**10,762**	**$ 214**	**$ 58,302**	**$ (44,874)**	**$ 13,642**
Net loss	—	—	—	(15,002)	(15,002)
Treasury Stock	(43)	—	—	—	
Share-based compensation	—	—	1,185	—	1,185
Redomiciliation share exchange	—	(203)	203	—	—
Issuance of common stock to Ultragenyx and option, net of issuance costs	2,400	2	15,543	—	15,545
Issuance of common stock, net of issuance costs	1,995	2	21,276	—	21,278
Issuance of common stock upon exercise of stock options	12	—	50	—	50
Effect of adoption of ASU 2014-09	—	—	—	(803)	(803)
BALANCE – September 30, 2019	**15,126**	**$ 15**	**$ 96,559**	**$ (60,679)**	**$ 35,895**

The accompanying notes are an integral part of these condensed consolidated financial statements.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited)
in thousands

	Nine Months Ended September 30,	
	2020	**2019**
OPERATING ACTIVITIES:		
Net loss	$ (41,044)	$ (15,002)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities:		
Depreciation and amortization	613	531
Share-based compensation expense	3,938	1,185
Loss (gain) from equity-method investment	263	(15)
Other non-cash interest expense	1,027	649
Changes in operating assets and liabilities		
Accounts receivable	(268)	1,856
Prepaid expense and other assets	(3,872)	(1,973)
Accounts payable	15	1,489
Accrued liabilities	7,335	1,432
Deferred revenue	(4,236)	10,941
Net cash (used in) provided by operating activities	(36,229)	1,093
INVESTING ACTIVITIES:		
Acquisition of property and equipment	(1,045)	(503)
Net cash used in investing activities	(1,045)	(503)
FINANCING ACTIVITIES:		
Proceeds from issuance of common stock, net of issuance costs	261,883	21,278
Proceeds from the issuance of common stock to Ultragenyx and option exercise	9,600	15,545
Proceeds from exercise of stock options	1,461	50
Net cash provided by financing activities	272,944	36,873
NET INCREASE IN CASH, CASH EQUIVALENTS AND RESTRICTED CASH	235,670	37,463
Cash, cash equivalents and restricted cash at beginning of the period	71,460	36,816
Cash, cash equivalents and restricted cash at end of the period	$ 307,130	$ 74,279

	Nine Months Ended September 30,	
	2020	**2019**
Supplemental disclosure of cash flow information		
Cash paid for interest	$ 173	$ 508
Non-cash investing activities		
Right-of-use asset obtained in exchange for lease liabilities	$ 674	$ 5,868
Purchase of property and equipment in accounts payable	$ 670	$ 126

The accompanying notes are an integral part of these condensed consolidated financial statements.

Note 1. Description of Business, Basis of Presentation and Summary of Significant Accounting Policies

Description of Business

Arcturus Therapeutics Holdings Inc. (the "Company") is a clinical-stage messenger RNA medicines company focused on significant opportunities within liver and respiratory rare diseases, and the development of infectious disease vaccines utilizing its Self-Transcribing and Replicating RNA ("STARR") technology. In addition to the Company's internal messenger RNA ("mRNA") platform, its proprietary lipid nanoparticle delivery system, LUNAR, has the potential to enable multiple nucleic acid medicines.

In April 2020, the Company became a clinical stage Company when it announced that its Investigational New Drug ("IND") application for a Phase 1b study in patients with ornithine transcarbamylase ("OTC") deficiency was deemed allowed to proceed by the U.S. Food and Drug Administration ("FDA"), and an additional Clinical Trial Application ("CTA") for a Phase 1 study in healthy volunteers was approved by the New Zealand Medicines and Medical Devices Safety Authority.

In March 2020, the Company was awarded a grant (the "Grant") from the Singapore Economic Development Board to support the co-development of a potential COVID-19 vaccine with the Duke-NUS Medical School. The grant provides for up to S$14.0 million (approximately US$10.1 million using the exchange rate at the time the grant contract was entered into) in grants to support the development of the vaccine. The Company entered into an amendment to the Grant on September 24, 2020 to update certain delivery and milestone timelines. The Grant has been paid in full by the Economic Development Board as a result of the achievement of certain milestones related to the progress of the development of the vaccine, as set forth in the award agreement. The Company has agreed to pay Duke-NUS Medical School a royalty based on annual net sales of the vaccine in markets or jurisdictions outside of Singapore. In July 2020, the Company and Duke-NUS Medical School announced that the CTA for COVID-19 vaccine candidate (referred to herein as the LUNAR-COV19 vaccine candidate) had been approved to proceed by the Singapore Health Sciences Authority ("HSA").

On October 2, 2020, the Company was awarded another grant from the Singapore Economic Development Board to support the further development of the LUNAR-COV19 vaccine candidate. The grant provides for up to S$9.3 million (approximately US$6.7 million using the exchange rate at the time the grant contract was entered into) to support the development of the LUNAR-COV19 vaccine candidate.

On August 17, 2020, the Company entered into an agreement with the Israeli Ministry of Health ("MOH") to supply the Company's COVID-19 vaccine candidate to Israel (the "Israel Supply Agreement") subject to certain conditions, including applicable regulatory approvals. In October 2020, and in association with the Israel Supply Agreement, the Company received a non-refundable payment of $12.5 million from the MOH. This payment of $12.5 million is associated with a specified clinical trial milestone and serves as an initial reserve payment for a specified number of doses of the LUNAR-COV19 vaccine candidate pursuant to the Israel Supply Agreement. As a result of the making of this payment, the MOH has become bound to purchase an initial quantity of reserved vaccine doses, as set forth in and subject to the terms and conditions of the Israel Supply Agreement.

Basis of Presentation

The financial statements for periods prior to June 17, 2019, the effective date of the Company's Redomiciliation to the United States (as described in the Company's annual report on Form 10-K for the year ended December 31, 2019 (the "2019 Annual Report")), relate to its predecessor, Arcturus Therapeutics Ltd., and for the periods from and after June 17, 2019 relate to Arcturus Therapeutics Holdings Inc. Unless stated otherwise or the context otherwise requires, references to the "Company," "Arcturus," "we," "our" and "us" mean Arcturus Therapeutics Holdings Inc. and its consolidated subsidiaries from and after the effective time of the Redomiciliation and, prior to that time Arcturus Therapeutics Ltd.

The accompanying condensed consolidated financial statements include the accounts of Arcturus Therapeutics Holdings Inc. and its subsidiaries and, for the three and nine months ended September 30, 2020 and 2019, are unaudited. All intercompany accounts and transactions have been eliminated in consolidation. These condensed consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP") for interim financial information. Accordingly, they do not include all of the information and footnotes required by GAAP for complete financial statements. In management's opinion, the accompanying condensed consolidated financial statements reflect all adjustments, consisting of normal recurring adjustments, considered necessary for a fair presentation of the results for the interim periods presented.

Interim financial results are not necessarily indicative of results anticipated for the full year. These condensed consolidated financial statements should be read in conjunction with the audited financial statements and footnotes included in the Company's 2019 Annual Report.

These condensed consolidated financial statements are prepared in accordance with GAAP, which requires management to make estimates and assumptions regarding the valuation of certain debt and equity instruments, share-based compensation, accruals for liabilities, deferred revenue, and other matters that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Although these estimates are based on management's knowledge of current events and actions the Company may undertake in the future, actual results may ultimately differ from these estimates and assumptions.

Liquidity

The Company's activities since inception have consisted principally of research and development activities, general and administration activities, and raising capital. The Company's activities are subject to significant risks and uncertainties, including failing to secure additional funding before the Company achieves sustainable revenues and profit from operations.

The Company is a clinical-stage bioscience company that is dependent on obtaining external equity and debt financings to fund its operations. Historically, the Company's primary sources of financing have been through the sale of its securities, through issuance of debt and through collaboration agreements.

As mentioned above, the Company was recently awarded grants from the Singapore Economic Development Board of up to approximately $16.8 million in the aggregate to support the co-development and Phase 1/2 clinical trials of the LUNAR-COV19 vaccine candidate, part of which is being conducted with the Duke-NUS Medical School. Approximately $10.0 million of these grants were funded as of September 30, 2020. Additionally, in April 2020, the Company completed an underwritten public offering of 4,735,297 shares of common stock (including the underwriters' overallotment option) at a price of $17.00 per share. The Company received net proceeds of approximately $75.5 million in the offering.

In May 2020, Ultragenyx Pharmaceutical Inc. ("Ultragenyx") exercised its option to purchase 600,000 shares of the Company's common stock at $16 per share. The Company received proceeds of $9.6 million as a result of the option exercise.

In July 2020 the Company completed an additional underwritten public offering of 3,753,773 shares of common stock (including the underwriters' overallotment option) at a price of $53.00 per share. The Company received net proceeds of approximately $186.6 million in the offering.

Segment Information

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company and its chief operating decision-maker view the Company's operations and manage its business in one operating segment, which is the research and development of medical applications for the Company's nucleic acid-focused technology.

Revenue Recognition

Effective January 1, 2019, the Company adopted *Accounting Standards Update ("ASU") 2014-09, Revenue from Contracts with Customers (Topic 606)* ("Topic 606"), using the modified retrospective transition method. Topic 606 provides a unified model to determine how revenue is recognized and the Company applied the standard to collaborative research and technology agreements that were in progress as of the effective date, January 1, 2019. The Company determines revenue recognition for arrangements within the scope of Topic 606 by performing the following five steps: (i) identify the contract, (ii) identify the performance obligations in the contract, (iii) determine the transaction price, (iv) allocate the transaction price to the performance obligations in the contract, and (v) recognize revenue when, or as, the Company satisfies a performance obligation.

The terms of the Company's collaborative research and development agreements include license fees, upfront payments, milestone payments, reimbursement for research and development activities, option exercise fees, and royalties on sales of commercialized products. Arrangements that include upfront payments are recorded as deferred revenue upon receipt or when due and may require deferral of revenue recognition to a future period until the Company performs its obligations under these arrangements. The event-based milestone payments represent variable consideration, and the Company uses the most likely amount method to estimate this variable consideration because the potential milestone payment is a binary event, as the Company will either receive the milestone payment or it will not. The most likely amount method requires the Company to determine the likelihood of earning the milestone payment. Given the high degree of uncertainty around achievement of these milestones, the Company determines the milestone amounts to be fully constrained and does not recognize revenue until the uncertainty associated with these payments is resolved. The Company will recognize revenue from sales-based royalty payments when or as the sales occur. The Company will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur.

A performance obligation is a promise in a contract to transfer a distinct good or service to the counterparty and is the unit of account under Topic 606. A contract's transaction price is allocated to each distinct performance obligation based on relative standalone selling price and recognized as revenue when, or as, the performance obligation is satisfied.

See *"Note 2, Collaboration Revenue"* for specific details surrounding the Company's collaboration arrangements.

Leases

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842), which requires lessees to recognize most leases on the balance sheet as lease liabilities with corresponding right-of-use assets and to disclose key information about leasing arrangements. The Company adopted Topic 842 on its effective date in the first quarter of 2019 using a modified retrospective approach. The Company elected the available package of practical expedients upon adoption, which allowed it to carry forward historical assessments of whether existing agreements contained a lease and the classification of existing operating leases.

See *"Note 8, Commitments and Contingences"* for specific details surrounding the Company's leases.

Research and Development, Net

Research and development costs are expensed as incurred. These expenses result from the Company's independent research and development efforts as well as efforts associated with collaboration arrangements. Research and development costs include salaries and personnel-related costs, consulting fees, fees paid for contract research and manufacturing services, the costs of laboratory supplies, equipment and facilities, preclinical studies and other external costs, net of any grants.

Pre-Launch Inventory

Prior to obtaining initial regulatory approval for an investigational product candidate, the Company expenses costs relating to production of inventory as research and development expense in its condensed consolidated statements of operations, in the period incurred. When the Company believes regulatory approval and subsequent commercialization of an investigational product candidate is probable, and the Company also expects future economic benefit from the sales of the investigational product candidate to be realized, it will then capitalize the costs of production as inventory.

Statement of Cash Flows

The following table provides a reconciliation of cash and cash equivalents and restricted cash reported within the condensed consolidated balance sheet to the total of the same such amounts shown in the condensed consolidated statement of cash flows:

(in thousands)	September 30, 2020	September 30, 2019
Cash and cash equivalents	$ 307,023	$ 74,172
Non-current restricted cash	107	107
Total cash, cash equivalents and restricted cash shown in the statement of cash flows	$ 307,130	$ 74,279

Net Loss per Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock outstanding for the period, without consideration of common stock equivalents. Diluted net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock and dilutive common stock equivalents outstanding for the period determined using the treasury-stock method. Dilutive shares of common stock are comprised of stock options.

No dividends were declared or paid during the reported periods.

Note 2. Collaboration Revenue

The Company has entered into license agreements and collaborative research and development arrangements with pharmaceutical and biotechnology companies. Under these arrangements, the Company is entitled to receive license fees, upfront payments, milestone payments if and when certain research and development milestones or technology transfer milestones are achieved, royalties on approved product sales and reimbursement for research and development activities. The Company's costs of performing these services are included within research and development expenses. The Company's milestone payments are typically defined by achievement of certain preclinical, clinical, and commercial success criteria. Preclinical milestones may, for example, include in vivo proof of concept in disease animal models, lead candidate identification, and completion of IND-enabling toxicology

studies. Clinical milestones may, for example, include successful enrollment of the first patient in or completion of Phase 1, 2 and 3 clinical trials, and commercial milestones are often tiered based on net or aggregate sale amounts. The Company cannot guarantee the achievement of these milestones due to risks associated with preclinical and clinical activities required for development of nucleic acid medicine-based therapeutics.

The following table presents changes during the nine months ended September 30, 2020 in the balances of contract assets, including receivables from collaborative partners, and contract liabilities, including deferred revenue, as compared to what was disclosed in the Company's 2019 Annual Report on Form 10-K.

(in thousands)	Contract Assets
BALANCE - December 31, 2019	$ 2,179
Additions for revenue recognized from billings	3,065
Deductions for cash collections	(2,797)
BALANCE – September 30, 2020	$ 2,447

(in thousands)	Contract Liabilities
BALANCE - December 31, 2019	$ 23,579
Additions for advanced billings	3,065
Deductions for promised services provided in current period	(7,301)
BALANCE – September 30, 2020	$ 19,343

The following table summarizes the Company's collaboration revenues for the periods indicated (in thousands).

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
(Dollars in thousands)	2020	2019	2020	2019
Collaboration Partner – Janssen	$ 879	$ 966	$ 2,469	$ 2,101
Collaboration Partner – Ultragenyx	912	922	2,736	4,854
Collaboration Partner – CureVac	241	1,057	782	6,360
Collaboration Partner – Other	301	373	1,314	4,506
Total collaboration revenue	$ 2,333	$ 3,318	$ 7,301	$ 17,821

The following paragraphs provide information regarding the nature and purpose of the Company's most significant collaboration arrangements.

Collaboration Partner – Janssen

In October 2017, the Company entered into a research collaboration and license agreement with Janssen (the "2017 Agreement"). The 2017 Agreement allocated discovery, development, funding obligations, and ownership of related intellectual property among the Company and Janssen Pharmaceuticals, Inc. ("Janssen"). The Company received an upfront payment of $7.7 million and may receive preclinical, development and sales milestone payments of up to $56.5 million, as well as royalty payments on any future licensed product sales. Janssen began reimbursing the Company for research costs during the first quarter of 2019 upon the completion of the first of three research periods. Janssen may also pay option exercise fees within the $1.0 million to $5.0 million range per target. Janssen will pay royalties as a low to mid-single digit percentage of net sales of licensed products, subject to reduction on a country-by-country and licensed-product-by-licensed-product basis and subject to certain events, such as expiration of program patents. In addition, the 2017 Agreement includes an exclusivity period.

In evaluating the 2017 Agreement in accordance with Accounting Standards Codification ("ASC") Topic 606, the Company concluded that the contract counterparty, Janssen, is a customer. The Company identified the following promised goods/services as of the inception of the 2017 Agreement: (i) research services, (ii) license to use Arcturus technology and (iii) participation in a joint research committee. The Company concluded that the promised goods/services are incapable of being distinct and consequently do not have any value on a standalone basis. Accordingly, they are determined to represent a single performance obligation. The Company concluded that Janssen's options to select additional collaboration targets and to license rights to selected targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated.

As of September 30, 2020, the remaining transaction price, consisting of upfront consideration received and budgeted reimbursable out-of-pocket costs, is expected to be recognized using an input method over the remaining research period of 24 months. None of the development and commercialization milestones were included in the transaction price, as all milestone amounts were not estimated to be met, are outside the control of the Company and contingent upon success in future clinical trials and Janssen's efforts. Any consideration related to sales-based royalties will be recognized when the related sales occur, provided that the reported sales are reliably measurable, and the Company has no remaining promised goods/services, as such sales were determined to relate predominantly to the license granted to Janssen and therefore have also been excluded from the transaction price.

Total deferred revenue as of September 30, 2020 and December 31, 2019 for Janssen was $5.9 million.

Collaboration Partner – Ultragenyx

In October 2015 the Company entered into a research collaboration and license agreement with Ultragenyx (the "Ultragenyx Agreement"), whereby Arcturus granted to Ultragenyx a co-exclusive license to certain Arcturus technology, which is in effect only during the reserve target exclusivity term as discussed in the following paragraphs. This collaboration agreement was amended in 2017, 2018 and during the second quarter of 2019. During the initial phase of the collaboration, the Company will design and optimize therapeutics for certain rare disease targets. Ultragenyx has the option under the Ultragenyx Agreement to add additional rare disease targets during the collaborative development period. Additionally, during the collaborative development period, the Company will participate with Ultragenyx in a joint steering committee. The Ultragenyx Agreement also includes an initial exclusivity period with an option to extend such period.

As part of the Ultragenyx Agreement and related amendments, Ultragenyx has paid $27.9 million in upfront fees, exclusivity extension fees and additional consideration. Ultragenyx also reimburses the Company for all internal and external development costs incurred. Pursuant to the Ultragenyx Agreement, Ultragenyx is required to make additional payments upon exercise of the Ultragenyx expansion option or exclusivity extension (if any) and if Ultragenyx achieves certain, clinical, regulatory and sales milestones, then the Company is eligible to receive royalty payments. For each development target for which Ultragenyx exercises its option, Ultragenyx will pay the Company a one-time option exercise fee that increases based upon the number of development targets selected by Ultragenyx and ranges from $0.5 million to $1.5 million.

The current potential development, regulatory and commercial milestone payments for the existing development targets as of September 30, 2020 are $138.0 million. Ultragenyx will pay royalties as a single-digit percentage of net sales on a product-by-product and country-by-country basis during the applicable royalty term. As of September 30, 2020, Ultragenyx has not yet reached the clinical phase of the contract.

On June 18, 2019, Arcturus and Ultragenyx amended the collaboration agreement for a third time ("Amendment 3"). As part of Amendment 3, the total number of targets was increased from 10 to 12, and reserve targets will be exclusively reserved for Ultragenyx with no fees for four years after execution of the amendment. An equity component was also added as part of Amendment 3 wherein Ultragenyx purchased 2.4 million shares of common stock at a premium price. Along with the equity purchase, Ultragenyx received an option to purchase 0.6 million additional shares of common stock at $16 per share. In May 2020, the option was exercised.

The consideration received from Ultragenyx as a result of Amendment 3 was equal to $30.0 million and was comprised of a $24.0 million common stock purchase and a $6.0 million upfront payment. Specifically for Amendment 3, management determined the transaction price to be $14.4 million. See further discussion below regarding determining the transaction price. Management determined the fair value of the premium received by using the opening stock price subsequent to execution of Amendment 3 and applying a lack of marketability discount, as the shares received by Ultragenyx were initially restricted for up to two years. Pursuant to the terms of the equity purchase agreement between the Company and Ultragenyx, the transfer restrictions will terminate on November 20, 2020 as a result of the purchase of the 0.6 million option shares.

In evaluating the Ultragenyx agreement in accordance with ASC Topic 606, the Company concluded that the contract counterparty, Ultragenyx, is a customer. The Company has identified the following promised goods/services as part of the initial agreement and subsequent amendments: (i) research services, (ii) license to use Arcturus technology, (iii) exclusivity and (iv) participation in a joint steering committee. The Company concluded that the promised goods/services are incapable of being distinct and consequently do not have any value on a standalone basis. Accordingly, they are determined to represent a single performance obligation. The Company concluded that Ultragenyx's options to extend exclusivity and select additional collaboration targets and to license rights to selected targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated.

As of September 30, 2020, the transaction price included the upfront consideration received, exclusivity extension payments and additional consideration received pursuant to Amendment 3. The Company recognizes the reimbursement of labor and expenses as costs are incurred and none of the development and commercialization milestones were included in the transaction price, as all milestone amounts were fully constrained. As part of its evaluation of the constraint, the Company considered numerous factors, including that the consideration is outside the control of the Company and contingent upon success in future clinical trials, approval from the FDA and the collaborator's efforts. Any consideration related to sales-based royalties will be recognized when the related sales occur as they are constrained, provided that the reported sales are reliably measurable and the Company has no remaining promised goods/services, as such sales were determined to relate predominantly to the license granted to Ultragenyx and therefore have also been excluded from the transaction price.

Amendment 3 was deemed a contract modification and accounted for as part of the original Ultragenyx Agreement and the Company recorded a cumulative catch-up adjustment of $1.1 million on the modification date. The transaction price is recognized to revenue on a straight-line basis using an input method over the 4-year reserve target exclusivity period. The reserve target exclusivity period represents the timing over which promised goods/services will be provided. Total deferred revenue at September 30, 2020 and December 31, 2019 from Ultragenyx was $10.0 million and $12.7 million, respectively.

Collaboration Partner – CureVac

In January 2018, the Company entered into a Development and Option Agreement (the "Development and Option Agreement") with CureVac AG ("CureVac"). Under the terms of the Development and Option Agreement, the parties agreed to conduct joint preclinical development programs once CureVac makes a payment to pull down a target on the basis of which CureVac is granted options for taking a license on pre-agreed license terms to develop and commercialize certain products incorporating the Company's patents and know-how related to LUNAR delivery technology (the "Arcturus Delivery Technology"), and CureVac patents and know-how related to mRNA technology. Subject to certain restrictions, the parties will have an undivided one-half interest in the patents and know-how developed jointly by the parties during the course of the Development and Option Agreement. Pursuant to the terms of the Development and Option Agreement, CureVac will have a number of target options to co-develop from a reserved target list to enter into licenses under the Arcturus Delivery Technology with respect to the development, manufacture and commercialization of licensed products (which can include products identified for development by the Company, unless the Company is permitted by the terms of the Development and Option Agreement to place such products on a restricted list). A separate notice and fee will be required for each license agreement. If the target to which the license agreement relates is chosen by the parties for co-development under the Co-Development Agreement (as defined below and discussed in the following paragraph) the license agreement will terminate, as such programs will be covered under the Co-Development Agreement discussed below, and therefore CureVac will be given a credit for any exercise fees, milestone payments already paid and all other payments made in relation to the license agreement towards future such payments incurred with respect to future licenses under the Arcturus Delivery Technology.

Prior to expiration of the initial term of eight years (which was subsequently amended, as discussed below), the Development and Option Agreement also includes an option to extend the term on an annual basis for up to three years, subject to payment by CureVac to Arcturus of a non-refundable annual extension fee. The Development and Option Agreement includes potential milestone payments from CureVac to the Company for selected targets. The current potential milestone payments for the remaining targets as of September 30, 2020 are $14.0 million for rare disease targets and $23.0 million for non-rare disease targets. CureVac will pay royalties as a percentage of net sales on a product-by-product and country-by-country basis during the applicable royalty term in the low single-digit range. As of September 30, 2020, CureVac has not yet reached the clinical phase of the contract. Pursuant to a May 2018 amendment to the Development and Option Agreement (and as amended and restated on September 28, 2018), the Company increased the number of targets available to CureVac under the Development and Option Agreement and agreed upon the license forms to be executed upon selection of the targets by CureVac.

Concurrently with the Development and Option Agreement, the Company entered into a Co-Development and Co-Commercialization Agreement (the "Co-Development Agreement") which the Company considered a combined contract with the Development and Option Agreement for purposes of revenue recognition. However, on February 11, 2019, the Company announced the termination of the obligations of CureVac for the preclinical development of ARCT-810, effective as of August 4, 2019, and the re-assumption by the Company of the worldwide rights thereto. As a result, Arcturus reassumed 100% global rights for clinical development candidate ARCT-810, a mRNA drug to treat OTC deficiency.

On July 26, 2019, the Company entered into an amendment ("CureVac Amendment") to its Development and Option Agreement with CureVac (as amended, the "Development and Option Agreement"), pursuant to which the Company and CureVac agreed to shorten the time period during which CureVac may select potential targets to be licensed from the Company from eight years to four years, and to reduce the overall number of maximum targets that may be reserved and licensed.

In connection with the July 2019 CureVac Amendment, the Company and CureVac also entered into a Termination Agreement (the "Termination Agreement") terminating the January 1, 2018 Co-Development Agreement between the Company and CureVac. Pursuant to the Termination Agreement, CureVac agreed to make a one-time payment to Arcturus in the amount of $4.0 million, which was made in July 2019.

In evaluating the CureVac Development and Option Agreement and Co-Development Agreement in accordance with ASC Topic 606, the Company concluded that the contract counterparty, CureVac, is a customer. The Company has identified the following promised goods/services as part of the initial agreement with CureVac and subsequent amendments: (i) research services, (ii) license to use Arcturus technology, (iii) exclusivity and (iv) participation in a joint steering committee. The Company concluded that the promised goods/services are incapable of being distinct and consequently do not have any value on a standalone basis. Accordingly, they are determined to represent a single performance obligation. The Company concluded that CureVac's options to extend the research term and options to select additional collaboration targets and to license rights to selected targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated.

As of September 30, 2020, the transaction price included the upfront consideration received. The Company recognizes the reimbursement of labor and expenses as costs are incurred and none of the development and commercialization milestones were included in the transaction price, as all milestone amounts were fully constrained. As part of its evaluation of the constraint, the Company considered numerous factors, including that receipt of the milestones is outside the control of the Company and contingent upon success in future clinical trials and the collaborator's efforts. Any consideration related to sales-based royalties will be recognized when the related sales occur as they are constrained, provided that the reported sales are reliably measurable and the Company has no remaining promised goods/services, as such sales were determined to relate predominantly to the license granted to CureVac and therefore have also been excluded from the transaction price. For the three months ended September 30, 2020, no adjustments were made to the transaction price.

The upfront consideration of $5.0 million was recorded as deferred revenue in the Company's balance sheet upon receipt and is currently being recognized as revenue on a straight-line basis using an input method over the remaining 34 month contractual term as of September 30, 2020. As a result of Amendment 3, the Company recorded a cumulative catch up adjustment of $0.4 million on the modification date, July 26, 2019. Total deferred revenue as of September 30, 2020 and December 31, 2019 for CureVac was $2.5 million and $3.2 million, respectively.

Other Collaboration Revenue

The remaining revenue from smaller collaboration agreements primarily relates to the agreements with Millennium Pharmaceuticals, Inc., a wholly owned subsidiary of Takeda Pharmaceutical Company Limited ("Takeda") and Synthetic Genomics, Inc. ("SGI"). Under the agreement with Takeda, the Company recognized $0.8 million during the first three quarters of 2020 which relates to the amortization of an upfront payment for research and development activities. The current agreement with Takeda was entered into on March 18, 2019 and is expected to be completed in the second quarter of 2021. Under the agreement with SGI, the Company recognized $0.3 million during the first three quarters of 2020 related to sublicensed technology.

Note 3. Fair Value Measurements

The Company establishes the fair value of its assets and liabilities using the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Company establishes a fair value hierarchy based on the inputs used to measure fair value.

The three levels of the fair value hierarchy are as follows:

Level 1: Quoted prices in active markets for identical assets or liabilities.

Level 2: Inputs, other than the quoted prices in active markets, that are observable either directly or indirectly.

Level 3: Unobservable inputs for which little or no market data exists and are therefore determined using estimates and assumptions developed by the Company, which reflect those that a market participant would use.

The carrying value of cash, cash equivalents, restricted cash, accounts receivable, accounts payable, and accrued liabilities approximate their respective fair values due to their relative short maturities. The carrying amount of long-term debt for the amount drawn on the Company's debt facility approximates fair value as the interest rate is variable and reflects current market rates.

As of September 30, 2020 and December 31, 2019, all assets measured at fair value on a recurring basis consisted of cash equivalents and money market funds, which were classified within Level 1 of the fair value hierarchy. The fair value of these financial instruments was measured based on quoted prices.

Note 4. Balance Sheet Details

Property and equipment, net consisted of the following:

(in thousands)	September 30, 2020	December 31, 2019
Research equipment	$ 5,343	$ 3,658
Computers and software	284	271
Office equipment and furniture	574	561
Leasehold improvements	44	40
Total	6,245	4,530
Less accumulated depreciation and amortization	(2,794)	(2,181)
Property and equipment, net	$ 3,451	$ 2,349

Depreciation and amortization expense was $0.2 million and $0.2 million for the three months ended September 30, 2020 and 2019, respectively, and $0.6 million and $0.5 million for the nine months ended September 30, 2020 and 2019, respectively.

Accrued liabilities consisted of the following as of September 30, 2020 and December 31, 2019:

(in thousands)	September 30, 2020	December 31, 2019
Accrued compensation	$ 3,099	$ 1,608
Cystic Fibrosis Foundation Liability	4,236	1,949
Singapore Economic Development Board Liability	2,106	—
Current portion of operating lease liability	1,198	827
Clinical accruals	1,352	—
Other accrued research and development expenses	3,847	2,750
Total	$ 15,838	$ 7,134

Note 5. Debt

Long-term debt with Western Alliance Bank

On October 12, 2018, Arcturus Therapeutics, Inc. entered into a Loan and Security Agreement with Western Alliance Bank (the “Bank”), whereby it received $10.0 million under a long-term debt agreement (the “Loan”).

The Loan is collateralized by all of the assets of Arcturus Therapeutics, Inc., excluding intellectual property, which is subject to a negative pledge. The Loan contains customary conditions of borrowing, events of default and covenants, including covenants that restrict Arcturus Therapeutics, Inc.’s ability to dispose of assets, merge with or acquire other entities, incur indebtedness and make distributions to holders of its capital stock. In addition, Arcturus Therapeutics, Inc. is required to maintain at least 100% of its consolidated, unrestricted cash, or $15.0 million, whichever is lower, with the Bank.

On October 30, 2019, Arcturus Therapeutics, Inc. and the Bank entered into a Third Amendment (the “Third Amendment”) to the Loan (as amended, the “Loan Agreement”).

Pursuant to the amendment, the Bank agreed to make a term loan to Arcturus Therapeutics, Inc. on October 30, 2019, in the amount of $15.0 million (the “Term Loan”). The resulting net increase in the indebtedness of Arcturus Therapeutics, Inc. was $5.0 million. The Term Loan bears interest at a floating rate ranging from 1.25% to 2.75% above the prime rate. The amendment further provides that the Term Loan has a maturity date of October 30, 2023. Arcturus Therapeutics, Inc. will make monthly payments of interest only until October 1, 2021.

Arcturus Therapeutics, Inc. paid a loan origination fee of $54,000 which was recorded as a debt discount along with the remaining loan origination fee from the Loan and is being accreted over the term of the Term Loan. In addition, Arcturus Therapeutics, Inc. is required to pay a fee of $525,000 upon certain change of control events.

The Term Loan may be prepaid in full at any time, subject to a prepayment fee ranging from 0.50% to 2.00% of the prepaid principal amount depending upon the date of the prepayment. In connection with the Third Amendment, the Company guaranteed the obligations under the Loan Agreement and pledged substantially all of its assets as security under the Loan Agreement.

Upon maturity or prepayment (as previously discussed), Arcturus Therapeutics, Inc. will be required to pay a 2% fee as a result of the FDA’s approval to proceed with the Company’s LUNAR-OTC (ARCT-810) program based on its IND submission. Such fee is accreted to the long-term debt balance using the effective interest method over the term of the Loan Agreement.

Should an event of default occur, including the occurrence of a material adverse effect, the Company could be liable for immediate repayment of all obligations under the Loan Agreement. As of September 30, 2020, the Company was in compliance with all covenants under the Loan Agreement.

Principal payments, including the final payment due at repayment, on the long-term debt for fiscal years 2021, 2022 and 2023 are $1.3 million, $7.5 million and $6.5 million, respectively, with no principal payments due in 2020.

The Company recognized interest expense related to its long-term debt of $0.2 million and $0.7 million for the three and nine months ended September 30, 2020, respectively, and $0.2 million and $0.6 million for the three and nine months ended September 30, 2019, respectively.

Note 6. Stockholders' Equity

Common Stock

The Company is currently authorized to issue 30,000,000 shares of common stock under its Certificate of Incorporation. As of September 30, 2020, the Company has issued 24,473,002 shares of common stock and has approximately 5,526,998 shares of common stock reserved for issuance, resulting in no authorized shares of common stock available for issuance. As a result, the Company will hold a special meeting of stockholders on November 10, 2020 to vote to increase the number of shares of common stock it is authorized to issue from 30,000,000 shares to 60,000,000 shares.

Restricted Common Shares

In March 2013, the founders of the Company purchased 2,783,686 shares of common stock for $0.0068 per share. Of the shares purchased, 1,538,353 were subject to a repurchase option whereby the Company has an option for two months after date of termination of service to repurchase any or all of the unvested shares at the original purchase price per share. The repurchase option will be deemed to be automatically exercised by the Company as of the end of the two-month period unless the Company notifies the purchaser that it does not intend to exercise its option. The shares will be vested (1) 25% after obtaining suitable siRNA license; (2) 25% after *in vivo* proof-of-concept is achieved; (3) 25% after a regulatory agency new drug application (such as an IND application) is filed and accepted by the applicable regulatory agency; and (4) 25% after human biological proof-of-concept is achieved. The Company met the first two milestones during 2013 and 2014 leaving an unvested balance of 769,176 shares. In 2017, the stock purchase agreements were amended to clarify vesting conditions and also to accelerate the vesting of 146,510 shares resulting in a modification expense of $1,495,000. The third and fourth milestones were achieved during the second and third quarters of 2020, respectively, and therefore, as of September 30, 2020, all shares of common stock were fully vested.

Net Loss per Share

Dilutive securities that were not included in the calculation of diluted net loss per share for the three and nine months ended September 30, 2020 as they were anti-dilutive totaled 1,405,378 and 1,129,949, respectively, and 166,921 and 96,615 for the three and nine months ended September 30, 2019, respectively.

Note 7. Share-Based Compensation

In June 2019, the Company adopted the 2019 Omnibus Equity Incentive Plan ("2019 Plan"), which was ratified by stockholders at the Company's 2019 annual meeting. Under the 2019 Plan, the Company is authorized to issue up to a maximum of 2,600,000 shares of common stock pursuant to the exercise of incentive stock options or other awards provided for therein. In June 2020, the stockholders of the Company approved an increase to the number of shares authorized for use in making awards under the 2019 Plan by 2,400,000 shares to 5,000,000. Accordingly, as of September 30, 2020, a total of 2,388,340 shares remain available for future issuance under the 2019 Plan, subject to the terms of the 2019 Plan.

In June 2020, the stockholders of the Company approved the 2020 Employee Stock Purchase Plan ("2020 Plan") which provides for 600,000 shares of Company common stock reserved for future issuance. The first accumulation period under the 2020 Plan commenced on August 17, 2020.

Stock Options

Share-based compensation expenses included in the Company's condensed consolidated statements of operations and comprehensive loss for the three and nine months ended September 30, 2020 and 2019 were:

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,	
(in thousands)	**2020**	**2019**	**2020**	**2019**
Research and development	$ 798	$ 158	$ 1,460	$ 466
General and administrative	1,190	225	2,478	719
Total	$ 1,988	$ 383	$ 3,938	$ 1,185

Note 8. Income Taxes

The Company is subject to taxation in the United States and various states. The primary difference between the effective tax rate and the federal statutory tax rate relates to the valuation allowances on the Company's net operating losses. No tax benefit was provided for losses incurred in the United States because those losses are offset by a full valuation allowance.

For the three and nine months ended September 30, 2020, the Company did not record any income tax expense. No tax benefit was provided for losses incurred in United States because those losses are offset by a full valuation allowance.

On March 27, 2020, the United States enacted the Coronavirus Aid, Relief and Economic Security Act (the "CARES Act"). The CARES Act is an emergency economic stimulus package that includes spending and tax breaks to strengthen the United States economy and fund a nationwide effort to curtail the effect of COVID-19. While the CARES Act provides sweeping tax changes in response to the COVID-19 pandemic, some of the more significant provisions which are expected to impact the Company's financial statements include removing of certain limitations on utilization of net operating losses, increasing the loss carryback period for certain losses to five years, and increasing the ability to deduct interest expense, as well as amending certain provisions of the previously enacted Tax Cuts and Jobs Act. For the nine months ended September 30, 2020, the Company estimated that the impact of the CARES Act will be immaterial to its tax position. The Company will continue to analyze the impact that the CARES Act will have in subsequent quarters on its financial position, results of operations or cash flows.

Note 9. Commitments and Contingencies

COVID-19 Vaccine Development

On March 4, 2020, the Company was awarded a grant (the "Grant") from the Singapore Economic Development Board to support the co-development of a potential COVID-19 vaccine with the Duke-NUS Medical School. The Grant provides for up to S$14.0 million (approximately US$10.1 million using the exchange rate at the time the grant contract was entered into) in grants to support the development of the vaccine. The Company entered into an amendment to the Grant on September 24, 2020 to update certain delivery and milestone timelines. The Grant has been paid in full by the Economic Development Board as a result of the achievement of certain milestones related to the progress of the development of the vaccine, as set forth in the award agreement. The funds received have been recognized as contra research and development expense in proportion to the percentage covered by the Economic Development Board of the overall budget. The Company is liable for certain expenses during the program. For the three and nine months ended September 30, 2020, the Company recognized $3.7 million and $7.9 million of contra expense, respectively, with $2.1 million remaining in accrued expenses.

On October 2, 2020, the Company was awarded another grant from the Singapore Economic Development Board to support the further development of a potential COVID-19 vaccine. The grant provides for up to S$9.3 million (approximately US$6.7 million) to support the development of the vaccine candidate. The grant will be paid in two installments upon the achievement of certain milestones related to the progress of the development of the vaccine candidate.

Cystic Fibrosis Foundation Agreement

On August 1, 2019, the Company amended its Development Program Letter Agreement, dated May 16, 2017 and as amended July 13, 2018, with the Cystic Fibrosis Foundation ("CFF"). Pursuant to the amendment, (i) CFF increased the amount it will award to advance LUNAR-CF to $15.0 million from approximately $3.2 million, (ii) the Company will provide $5.0 million in matching funds for remaining budgeted costs and (iii) the related disbursement schedule from CFF to Arcturus was modified such that (a) $4.0 million was disbursed upon execution of the CFF Amendment, (b) $2.0 million was disbursed within 30 days of the first day of each of January, April, July and October 2020 upon Arcturus invoicing CFF to meet project goals, and (c) the last payment of $3.0 million less the prior award previously paid out, equaling approximately $2.3 million, will be disbursed upon Arcturus Therapeutics, Inc. (i) invoicing CFF in order to allow it to meet good manufacturing practices and (ii) opening an IND application. The funds received from CFF will be recognized as contra research and development expense in proportion to the percentage covered by CFF of the overall budget. For the three and nine months ended September 30, 2020, the Company recognized $0.7 million and $3.7 million of contra expense, respectively, with $4.2 million remaining in accrued expenses. For the three and nine months ended September 30, 2019, the Company recognized $0.7 million of contra expense.

Leases

In October 2017, the Company entered into a non-cancellable operating lease agreement for office space adjacent to its previous headquarters. The commencement of the lease began in March 2018 and the lease extends for approximately 84 months from the commencement date with a remaining lease term through March 2025. Monthly rental payments are due under the lease and there are escalating rent payments during the term of the lease. The Company is also responsible for its proportional share of operating expenses of the building and common areas. In conjunction with the new lease, the Company received free rent for four months and received a tenant improvement allowance of $74,000. The lease may be extended for one five-year period at the then current market rate with annual escalations; however, the Company deemed the extension option not reasonably certain to be exercised and therefore excluded the option from the lease terms. The Company entered into an irrevocable standby letter of credit with the landlord for a security deposit of $96,000 upon executing the lease which is included (along with additional funds required to secure the letter of credit) in the balance of non-current restricted cash.

In February 2020, the Company entered into a non-cancellable operating lease agreement for office space near its current headquarters. The lease extends for 13 months from the commencement date. In conjunction with the new lease, the Company received free rent for one month. The lease may be extended for one twelve-month period, and in November 2020 the Company deemed the extension option reasonably certain to be exercised and will include the option in the lease terms beginning in October 2020.

Operating lease right-of-use asset and liability on the condensed consolidated balance sheets represent the present value of remaining lease payments over the remaining lease terms. The Company does not allocate lease payments to non-lease components; therefore, payments for common-area-maintenance and administrative services are not included in the operating lease right-of-use asset and liability. The Company uses its incremental borrowing rate to calculate the present value of the lease payments, as the implicit rate in the lease is not readily determinable.

As of September 30, 2020, the payments of the operating lease liability were as follows:

(in thousands)	**Remaining Lease Payments**
2020 (remaining)	$ 496
2021	1,427
2022	1,349
2023	1,390
2024	1,432
Thereafter	314
Total remaining lease payments	6,408
Less: imputed interest	(1,055)
Total operating lease liabilities	$ 5,353
Weighted-average remaining lease term	4.3 years
Weighted-average discount rate	8.4%

Operating lease costs consist of the fixed lease payments included in operating lease liability and are recorded on a straight-line basis over the lease term. Operating lease costs were $0.5 million and $1.3 million for the three and nine months ended September 30, 2020, respectively, and $0.3 million and $0.9 million for the three and nine months ended September 30, 2019, respectively.

Note 10. Related Party Transactions

Ultragenyx

On June 17, 2019, Arcturus and Ultragenyx executed Amendment 3 to the Ultragenyx Agreement. Pursuant to the amended Ultragenyx 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 (the "Additional Shares"). Ultragenyx exercised the Option in May 2020, and as a result, owns 12.3% of the outstanding common stock of the Company as of September 30, 2020. For the three and nine months ended September 30, 2020, the Company has recognized revenue of $0.9 million and $2.7 million, respectively, and for the three and nine months ended September 30, 2019, the Company recognized revenue of $0.9 million and $4.9 million, respectively. As of September 30, 2020 and 2019, the Company holds accounts receivable balances of negligible amounts related to the Ultragenyx Agreement.

Equity-Method Investment

In June 2018, the Company completed the sale of its intangible asset related to the ADAIR technology. Pursuant to the asset purchase agreement for ADAIR, the Company received a 30% ownership interest in the common stock of Vallon Pharmaceuticals, Inc. ("Vallon") in consideration for the sale of the ADAIR technology. The Company has no requirement to invest further in Vallon. During the third quarter of 2019, Vallon issued shares of its common stock at a share price greater than the initial investment which resulted in the Company recording a gain in its equity-method investment. The gain has been offset by additional losses incurred by Vallon. On October 23, 2020, Vallon filed with the Securities and Exchange Commission a registration statement on Form S-1 for an initial public offering of shares of common stock. For the nine months ended September 30, 2020, the Company recorded losses of $0.3 million. Subsequent to Vallon issuing shares of its common stock, the Company's ownership was reduced to 19%. As the Company continues to have the ability to exercise significant influence over the operating and financial policies of the investee, the Company will continue to account for the investment as an equity-method investment.

Note 11. Subsequent Events

On November 7, 2020, the Company's wholly-owned subsidiary, Arcturus Therapeutics, Inc., entered into a Manufacturing Support Agreement (the "Support Agreement") with the Economic Development Board of the Republic of Singapore (the "EDB"). Pursuant to the Support Agreement, the EDB has agreed to make a term loan of up to $45.0 million (the "Singapore Loan") to the Company, subject to the entry into an agreed upon security agreement (described below) and satisfaction of other customary deliveries, to support the development of the LUNAR-COV19 vaccine candidate. Outstanding balances on the Singapore Loan will earn interest, compounding annually, and the Company may prepay all or part of the Singapore Loan without penalty upon advance notice.

Subject to certain exceptions, the Singapore Loan is intended to be a limited recourse loan that is intended to be repaid solely through a royalty payment on sales of the LUNAR-COV19 vaccine candidate, with a portion of the proceeds on all such vaccine sales being applied on a quarterly basis to prepay outstanding principal and interest under the Singapore Loan. However, all unpaid principal and interest under the Singapore Loan will be due and payable five years after draw date, if net sales of the LUNAR-COV19 vaccine exceed a certain minimum threshold during this five year period or the Company obtains clearance to sell the vaccine in specified jurisdictions. Unpaid principal and interest under the Singapore Loan will also become due and payable upon an event of default under the Support Agreement.

If, any portion of the Singapore Loan is required to be forgiven pursuant to the terms of the Support Agreement, the EDB has the right to take ownership of certain raw materials and equipment that were purchased by the Company with proceeds of the Singapore Loan (the "Specified Assets") and the Company is required to enter into a security agreement (the "Security Agreement") for the benefit of the EDB before the Singapore Loan is drawn to provide that repayment of the Singapore Loan and related obligations are secured by a lien on the Specified Assets.

In connection with the entry into the Support Agreement, the Company entered into a consent agreement with Western Alliance Bank which provides Western Alliance Bank's consent to enter into the Singapore Loan and its commitment to amend the Loan and Security Agreement, dated as of October 12, 2018, between Western Alliance Bank and the Company, concurrently with the entry into the Security Agreement to exclude the Specified Assets from Western Alliance Bank's lien on certain assets of the Company.

The foregoing description of the Support Agreement does not purport to be complete and is qualified in its entirety by reference to the full text of the Support Agreement, which is filed as an exhibit to this Quarterly Report on Form 10-Q.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following is a discussion of the financial condition and results of operations of Arcturus Therapeutics Holdings Inc. for the three and nine-month periods ended September 30, 2020. Unless otherwise specified herein, references to the "Company," "Arcturus," "we," "our" and "us" mean Arcturus Therapeutics Holdings Inc. and its consolidated subsidiaries from and after the effective time of the Redomiciliation and, prior to that time, to our predecessor, Arcturus Therapeutics Ltd. You should read the following discussion and analysis together with the interim condensed consolidated financial statements and related notes included elsewhere herein. For additional information relating to our management's discussion and analysis of financial conditions and results of operations, please see our Annual Report on Form 10-K for the year ended December 31, 2019 (the "2019 Annual Report"), which was filed with the U.S. Securities and Exchange Commission (the "Commission") on March 16, 2020. Unless otherwise defined herein, capitalized words and expressions used herein shall have the same meanings ascribed to them in the 2019 Annual Report.

This Quarterly Report on Form 10-Q, and the documents incorporated by reference herein may contain "forward-looking statements" within the meaning of the federal securities laws made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth below under Part II, Item 1.A, "Risk Factors" in this quarterly report. Except as required by law, we assume no obligation to update these forward-looking statements, whether as a result of new information, future events or otherwise. These statements, which represent our current expectations or beliefs concerning various future events, may contain words such as "may," "will," "expect," "anticipate," "intend," "plan," "believe," "estimate" or other words indicating future results, though not all forward-looking statements necessarily contain these identifying words. Such statements may include, but are not limited to, statements concerning 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;*
- *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 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 the 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.*

Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results or performance to differ materially from those projected. These statements are only current predictions and are subject to known and unknown risks, uncertainties, and other factors that may cause our or our industry's actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. In addition, historic results of scientific research, preclinical and clinical trials do not guarantee that future research or trials will suggest the same conclusions, nor that historic results referred to herein will be interpreted the same in light of additional research, preclinical and

clinical trial results. The forward-looking statements contained in this quarterly report are subject to risks and uncertainties, including those discussed in our other filings with the Commission. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

Overview

Arcturus is a messenger RNA medicines company focused on significant opportunities within liver and respiratory rare diseases, and the development of infectious disease vaccines utilizing our Self-Transcribing and Replicating RNA ("STARR") technology. In addition to our internal messenger RNA ("mRNA") platform, our proprietary lipid nanoparticle delivery system, LUNAR, has the potential to enable multiple nucleic acid medicines.

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 that the versatility of our platform to target multiple tissues, its compatibility with various nucleic acid therapeutics, and our expertise in developing scalable manufacturing processes put us in a good position to deliver on the next generation of nucleic medicines.

In August 2020, we announced the dosing of all subjects in the first cohort of the Phase 1/2 clinical study of our LUNAR-COV19 vaccine candidate. The study is being conducted with CTI Clinical Trial and Consulting Services, a global contract research organization, and in collaboration with Duke-NUS Medical School in Singapore. Additionally, in October 2020, we announced the completion of the first three dose escalation cohorts in our ongoing Phase 1 study of ARCT-810, our messenger RNA-based therapeutic candidate for Ornithine Transcarbamylase ("OTC") deficiency.

Our activities since inception have consisted principally of research and development activities, general and administrative activities and raising capital to fund those efforts. Our activities are subject to significant risks and uncertainties, including failing to secure additional funding before we achieve sustainable revenues and profit from operations. As of September 30, 2020, we had an accumulated deficit of $112.7 million.

Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our condensed consolidated financial statements and related notes appearing elsewhere in this Report and our audited financial statements and related notes for the year ended December 31, 2019. Our historical results of operations and the year-to-year comparisons of our results of operations that follow are not necessarily indicative of future results.

Collaboration Revenue

We enter into arrangements with pharmaceutical and biotechnology partners that may contain upfront payments, license fees for research and development arrangements, research and development funding, milestone payments, option exercise fees and royalties on future sales. The following tables summarize our total revenues for the periods indicated (in thousands):

	Three Months Ended September 30,		2019 to 2020	
(Dollars in thousands)	2020	2019	$ change	% change
Collaboration revenue	$ 2,333	$ 3,318	$ (985)	-29.7%

Collaboration revenue decreased by $1.0 million during the three months ended September 30, 2020 as compared to the three months ended September 30, 2019. The decrease in collaboration revenue primarily relates to $0.8 million of decreased revenue from reduced reimbursements associated with the CureVac AG ("CureVac") co-development agreement that terminated in the second quarter of 2019.

	Nine Months Ended September 30,		2019 to 2020	
(Dollars in thousands)	2020	2019	$ change	% change
Collaboration revenue	$ 7,301	$ 17,821	$ (10,520)	-59.0%

Collaboration revenue decreased by $10.5 million during the nine months ended September 30, 2020 as compared to the nine months ended September 30, 2019. The decrease in collaboration revenue primarily relates to $5.6 million of decreased revenue from reduced reimbursements associated with the CureVac co-development agreement that terminated in the second quarter of 2019. The decrease further relates to a decrease in sublicense revenue from Synthetic Genomics as we recognized sublicense revenue of $3.3 million during the second quarter of 2019. The remaining decrease relates to a reduction of $2.1 million in revenue recognized related

to the Ultragenyx Agreement, as we recorded a large amount of upfront payment amortization upon the execution of the Ultragenyx Third Amendment during the second quarter of 2019 and also recognized fewer research and development expense reimbursements related to the Ultragenyx Agreement during the first nine months of 2020. The decrease was slightly offset by higher research and development expense reimbursements recognized in 2020 related to other collaboration agreements including with Janssen and Takeda.

Our operating expenses consist of research and development and general and administrative expenses.

(Dollars in thousands)	Three Months Ended September 30, 2020	2019	2019 to 2020 $ change	% change	Nine Months Ended September 30, 2020	2019	2019 to 2020 $ change	% change
Operating expenses:								
Research and development, net	$ 17,699	$ 7,053	$ 10,646	*	$ 33,560	$ 21,646	$ 11,914	55.0%
General and administrative	5,572	3,881	1,691	43.6%	14,183	10,871	3,312	30.5%
Total	$ 23,271	$ 10,934	$ 12,337	*	$ 47,743	$ 32,517	$ 15,226	46.8%

* *Greater than 100%*

Research and Development Expenses, net

The following table presents our total research and development expenses by category:

(Dollars in thousands)	Three Months Ended September 30, 2020	2019	2019 to 2020 $ change	% change	Nine Months Ended September 30, 2020	2019	2019 to 2020 $ change	% change
External pipeline development expenses:								
LUNAR-OTC (ARCT-810)	$ 5,444	$ 3,337	$ 2,107	63.1%	$ 10,318	$ 9,167	$ 1,151	12.6%
LUNAR-CF, net	837	147	690	*	2,141	598	1,543	*
LUNAR-COV19, net	6,247	—	6,247	*	8,806	—	8,806	*
Discovery technologies	816	787	29	3.7%	1,051	2,716	(1,665)	-61.3%
External platform development expenses:								
Partnered discovery technologies	470	348	122	35.1%	1,250	1,039	211	20.3%
Total development expenses	13,814	4,619	9,195	*	23,566	13,520	10,046	74.3%
Personnel related expenses, net	3,025	1,884	1,141	60.6%	7,402	6,408	994	15.5%
Facilities and equipment expenses	860	550	310	56.4%	2,592	1,718	874	50.9%
Total research and development expenses, net	$ 17,699	$ 7,053	$ 10,646	*	$ 33,560	$ 21,646	$ 11,914	55.0%

* *Greater than 100%*

Our research and development expenses consist primarily of external manufacturing costs, in-vivo research studies performed by contract research organizations, clinical and regulatory consultants, personnel related expenses and laboratory supplies related to conducting research and development activities. Costs to acquire and manufacture pre-launch inventory, mRNA supply for preclinical studies and clinical trials are recognized and included in external pipeline development expenses for the specific program.

The IND for our LUNAR-OTC (ARCT-810) program was accepted by the FDA in April 2020. As a result, the costs for this program increased by $2.1 million and $1.2 million for the three and nine months ended September 30, 2020, respectively, as compared to 2019.

LUNAR-CF expenses increased by $0.7 million and $1.5 million during the three and nine months ended September 30, 2020, respectively, as compared to 2019. The increase in LUNAR-CF expenses during 2020 was due primarily to increased research and development cost incurred in association with the amendment to the Cystic Fibrosis Foundation (“CFF”). Agreement executed in July 2019, and we expect that our development efforts and associated costs will increase in the near-term as the LUNAR-CF program moves toward expected IND submission expected in 2021. The current year amount was partially offset with funds awarded by the CFF.

In March 2020, we signed a contract for approximately $10.1 million (using the exchange rate at the time the grant contract was entered into) with the Singapore Economic Development Board that will fund a portion of the costs incurred in our LUNAR-COV19 program. In October 2020, we entered into an additional grant agreement for approximately $6.7 million (using the exchange rate at the time the grant contract was entered into). We expect that the program costs and pre-launch inventory costs will continue to increase as the clinical trial progresses and we advance program development. The research and development costs were $6.2 million and $8.8 million for the three and nine months ended September 30, 2020, respectively. There were no comparable costs in 2019.

Discovery technologies represents our efforts to expand our product pipeline and are expected to continually increase over the near future. However, during the three and nine months ended September 30, 2020 as compared to 2019, our discovery technologies costs remained flat and decreased by $1.7 million, respectively, as we focused our efforts on the advancement of our LUNAR-OTC (ARCT-810) and LUNAR-COV19 programs.

Within our platform development expenses, our partnered discovery expenses with our current partners are expected to fluctuate based on the needs of our collaboration partners. During the three and nine months ended September 30, 2020 as compared to the prior period in 2019, partnered discovery expenses were relatively flat as a result of the stage of each program in which our collaboration partners are currently working.

Personnel related expenses for the three and nine months ended September 30, 2020 increased by $1.1 million and $1.0 million, respectively, as compared to 2019. This increase was associated with increased headcount necessary to advance our clinical efforts and platform efforts. During the three and nine months ended September 30, 2020, personnel related expenses were offset by $0.3 million and $1.4 million of funds received from CFF, respectively, and $1.0 million and $1.7 million of funds received from the Singapore Economic Development Board, respectively. We expect to continue to expand our headcount as required to meet our future business plan and expect personnel related expenses to increase going forward. Additionally, the increase in personnel related expenses associated with an increase in share-based compensation as compared to 2019 as a result of an increase in stock price.

Facilities and equipment expenses increased by $0.3 million and $0.9 million during the three and nine months ended September 30, 2020, respectively, as compared to 2019. The increase resulted primarily from higher rent and related costs associated with our second facility lease that we entered into in February 2020.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related benefits for our executive, administrative and accounting functions and professional service fees for legal and accounting services as well as other general and administrative expenses.

General and administrative expenses for the three and nine months ended September 30, 2020 as compared to the three and nine months ended September 30, 2019 increased by $1.7 million and $3.3 million, respectively. This increase resulted primarily from personnel expense due to increased headcount and share-based compensation.

Finance expense, net

	Three Months Ended September 30,		2019 to 2020		Nine Months Ended September 30,		2019 to 2020	
(Dollars in thousands)	2020	2019	$ change	% change	2020	2019	$ change	% change
Finance expense, net:								
Interest income	$ 124	$ 85	$ 39	45.9%	$ 301	$ 293	$ 8	2.7%
Interest expense	(190)	(205)	15	-7.3%	(640)	(614)	(26)	4.2%
Total	$ (66)	$ (120)	$ 54	-45.0%	$ (339)	$ (321)	$ (18)	5.6%

Interest income, which is generated on cash and cash equivalents, increased for the three and nine months ended September 30, 2020 as compared to 2019. The increase resulted from higher balances of cash and cash equivalents, as a result of our equity offerings in April and July 2020. The increase in interest income was offset by recent significant reductions in interest rates. Interest expense, which is related to our Loan and Security Agreement with Western Alliance Bank, remained relatively flat for the three and nine months ended September 30, 2020 as compared to 2019.

Off-balance sheet arrangements

Through September 30, 2020, we have not entered into and did not have any relationships with unconsolidated entities or financial collaborations, such as entities often referred to as structured finance or special purpose entities, established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Contractual obligations

See "*Note 5, Debt*" in our Condensed Consolidated Financial Statements for a summary of changes in the long-term debt position of the Company as of September 30, 2020.

As of September 30, 2020, we have non-cancelable contractual obligations totaling approximately $6.4 million.

Liquidity and Capital Resources

We are a clinical stage bioscience company that is dependent on obtaining external equity and debt financings to fund our operations. We expect to continue to incur losses and utilize significant cash resources until we successfully develop a new successful drug. Our ability to transition to become profitable in the near future is dependent on the success of our COVID-19 vaccine, and in later years mRNA drug or vaccine candidates for OTC deficiency, cystic fibrosis and other possible mRNA drugs or vaccine candidates that are currently in the initial phases of development.

Historically, our major sources of cash have been comprised of proceeds from collaboration partners, various public and private offerings of our common stock, bank debt, option and warrant exercises, and interest income. From inception through September 30, 2020, we raised approximately $480.2 million in gross proceeds from various public and private offerings of our common stock, debt issuances, collaboration agreements, and the merger with Alcobra.

As of September 30, 2020, we had approximately $307.1 million in cash, cash equivalents, and restricted cash. During the third quarter of 2020, the Company raised additional capital of approximately $186.6 million through an underwritten public offering. In addition, the Company has borrowed $15.0 million through its facility with Western Alliance Bank.

Overview

The following table shows a summary of our cash flows for the nine months ended September 30, 2020 and 2019 (in thousands):

	Nine Months Ended September 30,	
(Dollars in thousands)	**2020**	**2019**
Cash provided by (used in):		
Operating activities	$ (36,229)	$ 1,093
Investing activities	(1,045)	(503)
Financing activities	272,944	36,873
Net increase in cash, cash equivalents and restricted cash	$ 235,670	$ 37,463

Operating Activities

Our primary use of cash is to fund operating expenses, which consist mainly of research and development expenditures and general and administrative expenditures. We have incurred significant losses which have been partially offset by cash received through our collaboration agreements, equity offerings, stock option exercises, debt financing and 2017 merger. Cash received under the collaboration agreements can vary from year to year depending on the terms of the agreements and work performed. These changes in cash flows primarily relate to the timing of cash receipts for upfront payments, reimbursable expenses and achievement of milestones under these collaborative agreements.

Net cash used in operating activities was $36.2 million on a net loss of $41.0 million for the nine months ended September 30, 2020, compared to net cash provided of $1.1 million on a net loss of $15.0 million for the nine months ended September 30, 2019. Adjustments for non-cash charges, including share-based compensation, depreciation and amortization, interest expense and loss from equity-method investment were $5.8 million and $2.4 million for the nine months ended September 30, 2020 and 2019, respectively.

Changes in working capital resulted in adjustments to operating net cash outflows of $1.0 million for the nine months ended September 30, 2020, and were driven by increases in accounts receivable and prepaid expenses as well as a decrease in deferred revenue offset by increases in accounts payable and accrued expenses. Changes in working capital resulted in adjustments to operating net cash inflows of $13.7 million for the nine months ended September 30, 2019, and were driven by decreases in accounts receivable as well as decreases in deferred revenue, accrued expenses and accounts payable offset by an increase in prepaid expenses.

Investing Activities

Net cash used in investing activities of $1.0 million and $0.5 million for the nine months ended September 30, 2020 and 2019, respectively, reflected cash used to purchase property and equipment

Financing Activities

Net cash provided by financing activities for the nine months ended September 30, 2020 reflected proceeds of $9.6 million from the issuance of common stock to Ultragenyx upon exercise of its option, proceeds from the issuance of common stock of $261.9 million, and proceeds from the exercise of stock options of $1.5 million. Net cash provided by financing activities for the nine months

ended September 30, 2019 reflected proceeds of (i) $15.5 million from the issuance of restricted common stock, (ii) $21.3 million from the issuance of common stock, and (iii) $0.1 million from the exercise of stock options.

Funding Requirements

We continue to incur significant expenses and will require additional capital to develop, test and manufacture our LUNAR-COV19 vaccine candidate and to continue clinical development of LUNAR-OTC; to advance our LUNAR-CF and LUNAR-CV preclinical programs into clinical development; to fund early research and development of novel and proprietary RNA medicines; and for general corporate and working capital purposes.

We intend to seek additional capital through equity and/or debt financings, collaborative or other funding arrangements with partners or through other sources of financing. Should we seek additional financing from outside sources, we may not be able to raise such financing on terms acceptable to us or at all. If we are unable to raise additional capital when required or on acceptable terms, we may be required to scale back or discontinue the advancement of product candidates, reduce headcount, dispose or out-license programs or technology, or engage in an alternative strategic transaction.

Our future funding requirements are difficult to forecast and will depend on many factors, including the following:

- the achievement of positive clinical results;
- the achievement of milestones under our collaboration agreements;
- the terms and timing of any other collaboration, licensing and other arrangements that we may establish;
- the initiation, progress, timing and completion of preclinical studies and clinical trials for our product candidates;
- the number and characteristics of product candidates that we pursue;
- the outcome, timing and cost of regulatory approvals;
- delays that may be caused by changing regulatory requirements;
- the cost and timing of hiring new employees to support our continued growth;
- the costs involved in filing and prosecuting patent applications and enforcing and defending patent claims;
- the costs and timing of procuring clinical and commercial supplies of our product candidates;
- the costs and timing of establishing sales, marketing and distribution capabilities;
- the costs associated with legal proceedings; and
- the extent to which we acquire or invest in businesses, products or technologies.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Our primary exposure to market risk is interest income and expense sensitivity and foreign currency exchange rates. Interest income and expense sensitivity is affected by changes in the general level of interest rates in the United States, and foreign currency exchange rate risk relates to grants from the Singapore Economic Development Board. When deemed appropriate, we may manage our exposure to foreign exchange market risks through the use of derivative financial instruments. We may utilize such derivative financial instruments for hedging or risk management purposes. Due to the nature of our cash and cash equivalents and our evaluation of the potential impact of foreign currency exchange rates, we believe that we are not currently subject to any material market risk exposure.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

As required by Rule 13a-15(b) and Rule 15d-15(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), our management, including our principal executive officer, our principal financial officer and our principal accounting officer, conducted an evaluation as of the end of the period covered by this Quarterly Report on Form 10-Q of the effectiveness of the design and operation of our disclosure controls and procedures. Based on that evaluation, management has concluded that as of September 30, 2020, the Company's disclosure controls and procedures were effective at the reasonable assurance level, and that the condensed consolidated financial statements included in this Form 10-Q for the quarterly period ended September 30, 2020 fairly present, in all material respects, our financial position, results of operations, comprehensive loss, statements of stockholders' equity and cash flows for the periods presented in conformity with U.S. generally accepted accounting principles.

Changes in Internal Control over Financial Reporting

As required by Rule 13a-15(d) and Rule 15d-15(d) of the Exchange Act, our management, including our principal executive officer, our principal financial officer and our principal accounting officer, conducted an evaluation of the internal control over financial reporting to determine whether any other changes occurred during the period covered by this Quarterly Report on Form 10-Q that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on that evaluation, our principal executive officer, principal financial officer and principal accounting officer concluded that there were no changes in our internal controls over financial reporting during the period covered by this Quarterly Report on Form 10-Q that materially affected, or were reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

On December 13, 2019, a former employee of the Company filed a complaint in San Diego County Superior Court, captioned *Adonary Munoz v. Arcturus Therapeutics, Inc., et al*, Case No. 37-2019-00066358-CU-PO-CTL. The lawsuit alleges sexual assault by an acquaintance of one of our employees and seeks to hold the Company liable on a number of causes of action. On January 17, 2020, a second amended complaint ("SAC") was filed seeking $30.0 million in damages, including punitive damages and damages for emotional distress. The plaintiff has agreed to stipulate to arbitration for the claims being alleged against the Company. The Company believes the allegations of Ms. Munoz against the Company in her complaint are without merit, and intends to vigorously defend itself in the foregoing action. However, in light of the preliminary stage of the litigation, the Company is unable to estimate a potential loss or range of losses relating to this matter.

Item 1A. Risk Factors.

Our business is subject to various risks, including those described in Item 1A of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which we strongly encourage you to review. Other than as set forth below, there have been no material changes to the risk factors described in our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the U.S. Securities and Exchange Commission ("SEC") on March 16, 2020, and in the Quarterly Report on Form 10-Q for the period ended June 30, 2020, filed with the SEC on August 10, 2020.

Our pursuit of a COVID-19 vaccine candidate is at an early stage. We may be unable to produce a vaccine that successfully prevents infection from the virus in a timely manner, if at all, and preliminary data may not be indicative of future success.

In response to the global outbreak of coronavirus, in March 2020, we entered into a partnership with Duke-NUS Medical School in Singapore to develop a COVID-19 vaccine for Singapore. Our development of the vaccine is in early stages, and we may be unable to produce a vaccine that successfully prevents infection from the virus in a timely manner, if at all. We commenced a Phase 1/2 clinical trial in Singapore in August 2020, and in connection therewith, we have injected our LUNAR-COV19 vaccine candidate into human subjects for the first time, If any adverse events occur in the trial subjects, or if preliminary data proves not to yield promising results, our development program could be delayed or halted altogether. We are also committing financial resources and personnel to the development of a COVID-19 vaccine which may cause delays in or otherwise negatively impact our other development programs, despite uncertainties surrounding the longevity and extent of coronavirus as a global health concern. Our business could be negatively impacted by our allocation of significant resources to a global health threat that is unpredictable and could rapidly dissipate or against which our vaccine, if developed, may not be partially or fully effective. In addition, a substantial number of companies, individuals and institutions are working to develop a vaccine, many of which have substantially greater financial, scientific and other resources than us, and another party may be successful in producing a more efficacious vaccine or other treatment for COVID-19 which may also lead to the diversion of governmental and quasi-governmental funding away from us and toward other companies, and lead to demand being driven away from our product, even if developed. Finally, even though we may report preliminary pre-clinical or other data that could appear to be positive, no assurance can be given that any product candidate will be safe in humans or prove to be effective. We will not be able to commercialize or market the product candidate unless and until we are able to demonstrate that our vaccine candidate is safe and effective in humans.

The positive data from the preclinical trials of LUNAR-COV19 vaccine candidate, may not be predictive of the results of our planned clinical trials, which is one of a number of factors that may delay or prevent us from receiving regulatory approval of our COVID-19 vaccine candidate.

Results from the Phase 1/2 study or any interim results of any further Phase 2 or Phase 3 studies for LUNAR-COV19, if approved, could show diminished efficacy as compared to our preclinical study results. We also may observe adverse events in subjects participating in these clinical studies. In addition, the interpretation of the data from our clinical trials of LUNAR-COV19 by regulatory agencies may differ from our interpretation of such data and such regulatory agencies may require that we conduct additional studies or analyses. Further, the assays being used to measure and analyze the effectiveness of vaccines being developed to treat COVID-19 have only recently been developed and are continuing to evolve. The validity and standardization of these assays has not yet been established, and the results obtained in clinical studies of LUNAR-COV19 with subsequent versions of these assays may be less positive than the pre-clinical results we have obtained to date. Any of these factors and others that we may not be able to identify at this time, could delay or prevent us from receiving regulatory approval of LUNAR-COV19 and there can be no assurance that LUNAR-COV19 will be approved in a timely manner, if at all.

Positive interim data from the ongoing Phase 1 study of our LUNAR-COV19 vaccine candidate may not be predictive of the results of later-stage clinical trials.

The interim data we have announced from the ongoing Phase 1/2 study of LUNAR-COV19 being developed in collaboration with Duke-NUS Medical School, are based on only interim analyses of the limited number of subjects. Further results from the ongoing Phase 1/2 study or any interim results of our future studies could show diminished efficacy as compared to the interim Phase 1/2 study results and could impact the number of required doses for future studies and any approved product. We also may observe more frequent or new adverse events in subjects participating in these ongoing clinical studies.

We are relying on advance purchase commitments of our LUNAR-COV19 vaccine candidate from certain foreign governmental agencies, including Singapore and the State of Israel.

Although we have previously raised capital to support the development and manufacture of our LUNAR-COV19 vaccine, we must also secure additional funding through contractual arrangements with third parties, including the governments of Singapore and the State of Israel. We may be unable to enter into such arrangements on favorable terms, or at all, which would adversely affect our ability to develop, manufacture and distribute a potential vaccine.

We will need to seek and secure significant funding through financings or from other sources to complete future Phase 2 and Phase 3 studies of our LUNAR-COV19 vaccine candidate.

As of September 30, 2020, we had approximately $307 million in cash, cash equivalents, and investments. We expect that our existing cash, cash equivalents, and investments will be sufficient to fund our current operations through at least the next twelve months. However, our operating plan may change as a result of many factors currently unknown to us, including with respect to the development, manufacturing and commercialization of our LUNAR-COV19 vaccine candidate, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings, structured financings, government or other third-party funding, sales of assets, marketing and distribution arrangements, other collaborations and licensing arrangements, or a combination of these approaches. In any event, we will require additional capital to obtain regulatory approval for, and to commercialize our LUNAR-COV19 vaccine candidate.

We may find it difficult to identify and enroll patients in our clinical studies given the limited number of patients who have the diseases for which certain of our product candidates are being studied. Difficulty in enrolling patients could delay or prevent clinical studies of certain of our product candidates.

Identifying and qualifying patients to participate in clinical studies of our product candidates is critical to our success. The timing of our clinical studies depends in part on the speed at which we can recruit patients to participate in testing our product candidates, and we may experience delays in our clinical studies if we encounter difficulties in enrollment.

Certain conditions for which we plan to evaluate our current product candidates are rare genetic diseases. Accordingly, there are limited patient pools from which to draw for clinical studies. For example, we estimate that approximately 8,000 patients in the developed world suffer from late-onset OTC deficiency, for which LUNAR-OTC is being studied.

In addition to the rarity of these diseases, the eligibility criteria of our clinical studies will further limit the pool of available study participants as we will require patients to have specific characteristics that we can measure or to assure their disease is either severe enough or not too advanced to include them in a study. The process of finding and diagnosing patients may prove costly, especially since the rare diseases we are studying are commonly underdiagnosed. We also may not be able to identify, recruit, and enroll a sufficient number of appropriate patients to complete our clinical studies because of demographic criteria for prospective patients, the perceived risks and benefits of the product candidate under study, the proximity and availability of clinical study sites for prospective patients, and the patient referral practices of physicians. The availability and efficacy of competing therapies and clinical studies can also adversely impact enrollment. If patients are unwilling to participate in our studies for any reason, the timeline for recruiting patients, conducting studies, and obtaining regulatory approval of potential products may be delayed, the commercial prospects of our product candidates will be harmed, and our ability to generate product revenue from any of these product candidates could be delayed or prevented. Furthermore, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical studies may also ultimately lead to the denial of regulatory approval of our product candidates. Delays in completing our clinical studies will increase our costs, slow down our product candidate development and approval process, and jeopardize our ability to commence product sales and generate revenue. Any of these occurrences may harm our business, financial condition, and prospects significantly.

We have a limited number of shares of common stock available for future issuance which could adversely affect our ability to raise capital or consummate acquisitions.

We are currently authorized to issue 30,000,000 shares of common stock under our Certificate of Incorporation. As of September 29, 2020, we have issued 24,473,002 shares of common stock and have approximately 5,526,998 shares of common stock reserved for issuance, resulting in no authorized shares of common stock available for issuance.

Due to the limited number of authorized shares of common stock available for issuance, we may not be able to raise additional equity capital or complete a merger, other business combination or partnership unless we increase the number of shares we are authorized to issue. We intend to seek stockholder approval to increase the number of our authorized shares of common stock at a special meeting to be held on November 10, 2020, but we can provide no assurance that we will succeed in amending our Certificate of Incorporation to increase the number of shares of common stock we are authorized to issue.

If we do not receive the requisite stockholder approval, our operations could be materially adversely impacted. In addition, an increase in the authorized number of shares of common stock and the subsequent issuance of such shares could have the effect of delaying or preventing a change in control of the Company without further action by our stockholders.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

None.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

On November 7, 2020, we entered into a Manufacturing Support Agreement (the "Support Agreement") with the Economic Development Board of the Republic of Singapore (the "EDB"). Pursuant to the Support Agreement, the EDB has agreed to make a term loan of up to $45.0 million (the "Singapore Loan") to us, subject to the entry into an agreed upon security agreement (described below) and satisfaction of other customary deliveries, to support the development of the LUNAR-COV19 vaccine candidate. Outstanding balances on the Singapore Loan will earn interest, compounding annually, and we may prepay all or part of the Singapore Loan without penalty upon advance notice.

Subject to certain exceptions, the Singapore Loan is intended to be a limited recourse loan that is intended to be repaid solely through a royalty payment on sales of the LUNAR-COV19 vaccine candidate, with a portion of the proceeds on all such vaccine sales being applied on a quarterly basis to prepay outstanding principal and interest under the Singapore Loan. However, all unpaid principal and interest under the Singapore Loan will be due and payable five years after draw date, if net sales of the LUNAR-COV19 vaccine exceed a certain minimum threshold during this five year period or we obtain clearance to sell the vaccine in specified jurisdictions. Unpaid principal and interest under the Singapore Loan will also become due and payable upon an event of default under the Support Agreement.

If, any portion of the Singapore Loan is required to be forgiven pursuant to the terms of the Support Agreement, the EDB has the right to take ownership of certain raw materials and equipment that were purchased by us with proceeds of the Singapore Loan (the "Specified Assets") and we are required to enter into a security agreement (the "Security Agreement") for the benefit of the EDB before the Singapore Loan is drawn to provide that repayment of the Singapore Loan and related obligations are secured by a lien on the Specified Assets.

In connection with the entry into the Support Agreement, we entered into a consent agreement with Western Alliance Bank which provides Western Alliance Bank's consent to enter into the Singapore Loan and its commitment to amend the Loan and Security Agreement, dated as of October 12, 2018, between Western Alliance Bank and us, concurrently with the entry into the Security Agreement to exclude the Specified Assets from Western Alliance Bank's lien on certain assets of ours.

The foregoing description of the Support Agreement does not purport to be complete and is qualified in its entirety by reference to the full text of the Support Agreement, which is filed as an exhibit to this Quarterly Report on Form 10-Q.

Item 6. Exhibits.

Exhibit No.	Description
3.1	Certificate of Incorporation of Arcturus Therapeutics Holdings Inc. Incorporated by reference to Exhibit 3.1 to the Company's Registration Statement on Form S-3, filed with the SEC on May 8, 2020 (File No. 333-238139).
3.2	Bylaws of Arcturus Therapeutics Holdings Inc. Incorporated by reference to Exhibit 3.2 to the Company's Registration Statement on Form S-3, filed with the SEC on May 8, 2020 (File No. 333-238139).
4.1	Agreement and Plan of Merger and Reorganization, by and between Alcobra Ltd., Aleph MergerSub, Inc. and Arcturus Therapeutics, Inc., dated as of September 27, 2017. Incorporated by reference to Exhibit 99.2 to the Company's Report of Foreign Private Issuer on Form 6-K filed on September 28, 2017 (File No. 001-35932).
4.2	2020 Employee Stock Purchase Plan. Incorporated by reference to Exhibit 4.3 to the Company's Registration Statement on Form S-8, filed with the SEC on August 5, 2020 (File No. 333-240392).
4.3†	Amended and Restated 2019 Omnibus Equity Incentive Plan. Incorporated by reference to Exhibit 4.3 to the Company's Registration Statement on Form S-8, filed with the SEC on August 5, 2020 (File No. 333-240397).
10.1†	Form of Indemnification Agreement. Incorporated by reference to Exhibit 10.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 filed on March 16, 2020 (File No. 001-38942).
10.2	Underwriting Agreement, dated July 28, 2020, by and among Arcturus Therapeutics Holdings Inc., Citigroup Global Markets Inc., Guggenheim Securities, LLC, and Barclays Capital Inc. Incorporated by reference to Exhibit 1.1 to Form 8-K filed on July 29, 2020 (File No. 001-38942)
10.3†	Arcturus Therapeutics Ltd. Amended and Restated Compensation Policy for Company Office Holders. Incorporated by reference to Exhibit 99.2 to the Company's Report of Foreign Private Issuer on Form 6-K filed on July 27, 2018 (File No. 001-35932).
10.4	Loan and Security Agreement, dated October 12, 2018, by and between Western Alliance Bank and Arcturus Therapeutics, Inc. Incorporated by reference to Exhibit 10.1 to the Company's Report of Foreign Private Issuer on Form 6-K filed on October 15, 2018 (File No. 001-35932).
10.5	Amended and Restated Amendment to Development and Option Agreement, dated as of September 28, 2018, by and between CureVac AG and Arcturus Therapeutics Inc. Incorporated by reference to Exhibit 99.2 to the Company's Report of Foreign Private Issuer on Form 6-K filed on October 1, 2018 (File No. 001-35932).
10.6	Research Collaboration and License Agreement, by and between Arcturus Therapeutics, Inc. and Janssen Pharmaceuticals, Inc., dated October 18, 2017. Incorporated by reference to Exhibit 4.7 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.7	Research and Exclusive License Agreement, by and between Arcturus Therapeutics, Inc. and Synthetic Genomics, Inc., effective October 24, 2017. Incorporated by reference to Exhibit 4.8 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.8	Research Agreement, by and between Arcturus Therapeutics, Inc. and Millennium Pharmaceuticals, Inc., a wholly-owned subsidiary of Takeda Pharmaceutical Company Limited, effective December 6, 2016, as amended December 21, 2017. Incorporated by reference to Exhibit 4.9 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.9	Research Collaboration and License Agreement, by and between Arcturus Therapeutics, Inc. and Ultragenyx Pharmaceutical Inc., entered into as of October 26, 2015, as amended October 17, 2017 and April 20, 2018. Incorporated by reference to Exhibit 4.10 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.10	Third Amendment to Research Collaboration and License Agreement, by and between Arcturus Therapeutics, Inc. and Ultragenyx Pharmaceutical Inc., effective June 18, 2019. Incorporated by reference to Exhibit 10.2 to Form 8-K filed on June 20, 2019 (File No. 001-38942).
10.11	Letter Agreement, by and between Arcturus Therapeutics, Inc. and the Cystic Fibrosis Foundation, dated May 16, 2017. Incorporated by reference to Exhibit 4.11 to Form 20-F filed on May 14, 2018 (File No. 001-35932).

10.12	Amendment No. 2 to Letter Agreement, by and between Arcturus Therapeutics, Inc. and the Cystic Fibrosis Foundation, dated August 1, 2019. Incorporated by reference to Exhibit 10.16 to Form 10-Q filed on August 14, 2019.
10.13	Development and Option Agreement, by and between Arcturus Therapeutics, Inc. and CureVac AG, dated January 1, 2018, as amended May 3, 2018. Incorporated by reference to Exhibit 4.12 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.14	Third Amendment to Development and Option Agreement, by and between Arcturus Therapeutics, Inc. and CureVac AG, dated July 26, 2019. Incorporated by reference to Exhibit 10.20 to Form 10-Q filed on August 14, 2019 (File No. 001-38942).
10.15	Co-Development and Co-Commercialization Agreement, by and between Arcturus Therapeutics, Inc. and CureVac AG, dated January 1, 2018. Incorporated by reference to Exhibit 4.13 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.16	Termination Agreement, by and between Arcturus Therapeutics, Inc. and CureVac AG, dated July 26, 2019. Incorporated by reference to Exhibit 10.21 to Form 10-Q filed on August 14, 2019 (File No. 001-38942).
10.17	License Agreement, by and between Arcturus Therapeutics, Inc., as successor-in-interest to Marina Biotech, Inc., and Protiva Biotherapeutics Inc., dated as of November 28, 2012. Incorporated by reference to Exhibit 4.14 to Form 20-F/A filed on July 10, 2018 (File No. 001-35932).
10.18	Patent Assignment and License Agreement, by and between Arcturus Therapeutics, Inc. and Marina Biotech, Inc., dated as of August 9, 2013. Incorporated by reference to Exhibit 4.15 to Form 20-F filed with the SEC on May 14, 2018 (File No. 001-35932).
10.19	Share Exchange Agreement, dated as of February 11, 2019, by and between Arcturus Therapeutics Ltd. and Arcturus Therapeutics Holdings Inc. Incorporated by reference to Exhibit 10.13 to the Company's Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on March 18, 2019.
10.20	Amended and Restated Joint Venture, Research Collaboration and License Agreement, dated as of July 14, 2018 by and between Arcturus Therapeutics, Inc. and Providence Therapeutics, Inc. Incorporated by reference to Exhibit 10.14 to the Company's Amendment No. 1 to Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on April 10, 2019.
10.21	Research Collaboration Agreement, dated as of March 8, 2019 by and between Arcturus Therapeutics, Inc. and Millennium Pharmaceuticals, Inc., a wholly-owned subsidiary of Takeda Pharmaceutical Company Limited. Incorporated by reference to Exhibit 10.15 to the Company's Annual Report on Form 10-K for the year ended December 31, 2018 filed with the SEC on March 18, 2019.
10.22	Lease Agreement, by and between Arcturus Therapeutics, Inc. and ARE-SD Region No. 44, LLC, dated October 4, 2017. Incorporated by reference to Exhibit 4.6 to Form 20-F filed on May 14, 2018 (File No. 001-35932).
10.23	Lease Agreement, by and between Arcturus Therapeutics Holdings Inc. and ARE-SD Region No. 44, LLC dated February 1, 2020. Incorporated by reference to Exhibit 10.23 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 filed on March 16, 2020 (File No. 001-38942).
10.24^	Acceptance Letter, dated March 4, 2020, between Arcturus Therapeutics Holdings, Inc. and the Economic Development Board of Singapore. Incorporated by reference to Exhibit 10.24 to the Company's Annual Report on Form 10-K for the year ended December 31, 2019 filed on March 16, 2020 (File No. 001-38942).
10.25	Sales Agreement, dated as of March 27, 2020, between the Company and Stifel, Nicolaus & Company, Incorporated. Incorporated by reference to Exhibit 10.1 to Form 8-K filed on March 27, 2020 (File No. 001-38942)
10.26	Underwriting Agreement dated April 16, 2020, by and between Arcturus Therapeutics Holdings Inc. and Guggenheim Securities, LLC. Incorporated by reference to Exhibit 1.1 to Form 8-K filed on April 17, 2020 (File No. 001-38942)
10.27†	Employment Agreement, dated as of June 13, 2019, between the Company and Joseph Payne. Incorporated by reference to Exhibit 10.1 to Form 8-K12B filed on June 14, 2019 (File No. 001-38942)
10.28†	Employment Agreement, dated as of June 13, 2019, between the Company and Andy Sassine. Incorporated by reference to Exhibit 10.2 to Form 8-K12B filed on June 14, 2019 (File No. 001-38942)
10.29†	Employment Agreement, dated as of June 13, 2019, between the Company and Dr. Padmanabh Chivukula. Incorporated by reference to Exhibit 10.3 to Form 8-K12B filed on June 14, 2019 (File No. 001-38942)

10.30	Registration Rights Agreement, dated as of June 18, 2019, between the Company and Ultragenyx Pharmaceutical Inc. Incorporated by reference to Exhibit 4.1 to Form 8-K filed on June 20, 2019 (File No. 001-38942).
10.31	Equity Purchase Agreement, dated as of June 18, 2019, between the Company and Ultragenyx Pharmaceutical Inc. Incorporated by reference to Exhibit 10.1 to Form 8-K filed on June 20, 2019 (File No. 001-38942).
10.32*^	Supply Agreement, dated August 17, 2020, between Arcturus Therapeutics, Inc. and the Israeli Ministry of Health.
10.33*^	Manufacturing Support Agreement, dated November 7, 2020, between Arcturus Therapeutics Holdings, Inc. and the Economic Development Board of Singapore.
31.1*	Certification by Principal Executive Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as amended.
31.2*	Certification by Principal Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as amended.
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
	101.INS XBRL Instance Document
	101.SCH XBRL Taxonomy Extension Schema Document
	101.CAL XBRL Taxonomy Extension Calculation Linkbase Document
	101.DEF XBRL Taxonomy Extension Definition Linkbase Document
	101.LAB XBRL Taxonomy Extension Labels Linkbase Document
	101.PRE XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.

^ Certain confidential portions of this exhibit have been redacted from the publicly filed document because such portions are (i) not material and (ii) would be competitively harmful if publicly disclosed.

† Management compensatory plan, contract or arrangement.

SIGNATURE

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, thereunto duly authorized.

ARCTURUS THERAPEUTICS HOLDINGS INC.

Date: November 9, 2020

By: /s/ Andrew Sassine
Andrew Sassine
Chief Financial Officer

CERTAIN INFORMATION IDENTIFIED
BY BRACKETED ASTERISKS ([* * *])
HAS BEEN OMITTED FROM THIS EXHIBIT BECAUSE
IT IS BOTH NOT MATERIAL AND WOULD BE
COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED.

Exhibit 10.32

SUPPLY AGREEMENT

This SUPPLY AGREEMENT (the "***Agreement***"), dated as of August 17, 2020 (the "***Effective Date***"), is being entered into by and between Arcturus Therapeutics, Inc., a Delaware corporation ("***Arcturus***"), and the Israeli Ministry of Health (the "***MOH***"). Arcturus and the MOH may be referred to herein by name or individually, as a "**Party**" and collectively, as the "**Parties**."

BACKGROUND

WHEREAS, Arcturus is a messenger RNA medicines company focused on the discovery, development and commercialization of therapeutics for rare diseases and vaccines;

WHEREAS, Arcturus is currently developing a vaccine candidate intended to protect against the SARS-CoV-2 coronavirus ("***LUNAR-COV19***");

WHEREAS, LUNAR-COV19 is being developed utilizing Arcturus' self-transcribing and replicating internal messenger RNA (STARR™) technology and Arcturus' LUNAR® lipid-mediated delivery in order to produce a low dose SARS-CoV-2 coronavirus vaccine (the "***Vaccine***");

WHEREAS, Arcturus has commenced a Phase 1/2 clinical trial (the "***Clinical Trial***") of the Vaccine in Singapore under the authority of the Singapore Health Sciences Authority;

WHEREAS, the MOH is entering into this Agreement to secure certain rights to purchase quantities of the Vaccine from Arcturus, subject to the terms and conditions set forth herein;

WHEREAS, the MOH acknowledges that the Vaccine has not been approved for use by any Regulatory Authority as of the Effective Date;

WHEREAS, Arcturus acknowledges that it will not ship any Vaccine to the MOH until Arcturus has first received Regulatory Approval from the MOH to ship the Vaccine into the State of Israel; and

WHEREAS, Arcturus and the MOH are entering into this Agreement to set forth the terms and conditions under which Arcturus will supply to the MOH, and the MOH will purchase from Arcturus, doses of the Vaccine.

NOW, THEREFORE, in consideration of the covenants, conditions and undertakings hereinafter set forth, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows.

Article I
DEFINITIONS

The following terms shall have the following meanings when used in this Agreement:

1.1 "Affiliate" means, with respect to either Party, any business entity controlling, controlled by, or under common control with such Party. For the purpose of this definition only, "control" means (i) the possession, directly or indirectly, of the power to direct the management or policies of a business entity, whether through the ownership of voting securities, by contract or otherwise, or (ii) the ownership, directly or indirectly, of at least fifty percent (50%) of the voting securities or other ownership interest of a business entity.

1.2 "Business Day" means any day other than a Saturday or Sunday or a day on which banks are required or authorized to be closed in the City of New York, New York or in the City of Tel Aviv, Israel.

1.3 "cGMP" means current Good Manufacturing Practices promulgated by the FDA, including within the meaning of 21 C.F.R. Parts 210 and 211, as amended.

1.4 "Confidential Information" means all information of whatsoever nature (whether oral, written, electronic or in any other form) including data, know-how, trade secrets, manufacturing processes and systems, samples of goods, software techniques, procedures, test methods, unpublished financial statements and information, licenses, prices, price lists, pricing policies, customer and supplier lists, customer and supplier names and other information relating to customers and suppliers, marketing techniques and marketing development tactics and plans, and all other information containing or consisting of material of a technical, operational, administrative, economic, marketing, planning, business or financial nature or in the nature of Intellectual Property, in each case, disclosed by Arcturus or any Affiliate of Arcturus to the MOH or any of its employees, agents or contractors, or disclosed by the MOH to Arcturus or any of its Affiliates, or its or their employees, agents or contractors pursuant to this Agreement. For clarity all of Arcturus' Intellectual Property shall be deemed Confidential Information of Arcturus.

1.5 "Data Release Date" means the date that Arcturus first publicly releases results from the Clinical Trial.

1.6 "Initial Clinical Trial Milestone Date" means the date Arcturus notifies the MOH in writing that Arcturus has commenced dosing of the Vaccine in the first expansion cohort of the Clinical Trial.

1.7 "Initial Reserve Purchase Price" means [***].

1.8 "Intellectual Property" means each of the following: (i) copyrights, trademarks, trade secrets, patent rights, supplementary patent certificates, patent extensions, know-how, concepts, database rights, and rights in trademarks, trade secrets and designs (whether registered or unregistered), (ii) applications for registration, and the right to apply for registration, for any of the same, (iii) all other intellectual property rights and equivalent or similar forms of protection existing anywhere in the world, (iv) inventions, developments, methods or processes, including any intellectual property rights in the foregoing and (v) modifications or improvements to any of the items in clauses (i)-(iv).

1.9 "Laws" means all laws, statutes, rules, regulations and ordinances, as amended from time to time, of the United States, Singapore and the State of Israel, in each case applicable to the obligations of Arcturus or the MOH or their respective Affiliates, as the context requires, under this Agreement, including (i) all applicable federal, state and local laws and regulations of the United States, the State of Israel and Singapore, (ii) the U.S. Federal Food, Drug and Cosmetic Act, (iii) the State of Israel and Singapore equivalents to the U.S. Federal Food, Drug and Cosmetic Act, and (iv) cGMP, where applicable.

1.10 "Manufacture" means the processes and procedures for the supply of the Vaccine Doses, including, (i) the supply and quality control of the Raw Materials, (ii) the manufacture of the Vaccine in

bulk at a Manufacturing Site, (iii) fill and finish, (iv) the quality control and release by a responsible person of the Vaccine Doses and (v) the storage of the Vaccine Doses until shipment.

1.11 "Manufacturing Site" means any manufacturing site at which the Vaccine has been Manufactured, which locations will be identified by Arcturus to the MOH in writing.

1.12 "Person" means an individual, a corporation, a partnership, an association, a trust or other entity or organization, including a government or political subdivision or an agency thereof.

1.13 "Raw Materials" means all LUNAR-COV19 drug substance, raw materials, supplies, components and packaging necessary to manufacture and ship Vaccine Doses.

1.14 "Regulatory Approval" means, with respect to a product in a particular country or jurisdiction of the Territory, all approvals, licenses, permits, certifications, registrations or authorizations necessary for the sale or supply of such product in such country or jurisdiction, but excluding pricing approvals.

1.15 "Regulatory Authority" means any international, federal, state or local governmental or regulatory body, agency, department, bureau, court or other entities (including the Specified Regulatory Agencies) responsible for (A) the regulation (including pricing) of any aspect of pharmaceutical or medicinal products intended for human use or (B) health, safety or environmental matters generally.

1.16 "Representative" means a Party's employees, agents and other representatives (including contractors, consultants and advisors).

1.17 "Required Regulatory Approval" means (i) the approvals and authorizations of the MOH that are necessary for the importation and use of the Vaccine in the Territory for emergency, conditional or permanent use, and (ii) [***].

1.18 "Reserve Period" means the period beginning on the Effective Date and ending on [***].

1.19 "Specified Regulatory Approval Date" means the date that Arcturus receives approval to administer, use or sell the Vaccine from at least one of the Specified Regulatory Agencies for emergency, conditional or permanent use.

1.20 "Specified Regulatory Agencies" means: [***].

1.21 "SDEA" means a Safety Data Exchange Agreement entered into by the Parties relating to the Vaccine.

1.22 "Specifications" means the specifications for the Vaccine that are provided by Arcturus to the MOH in writing at least thirty (30) days before delivery of the Vaccine.

1.23 "Stockpiling Period" means the period beginning on the Effective Date and ending on [***].

1.24 "Taxes" means all taxes and duties that are assessed by any national, federal, state, local or non-U.S. Governmental Authority, including, without limitation, sales, use, excise, value-added and withholding taxes.

1.25 "Territory" means the State of Israel.

1.26 "Vaccine Dose" means a dose of the Vaccine to be delivered to the MOH pursuant to the terms and conditions of this Agreement, [***].

1.27 "Vaccine Dose Formulation" means the dosage formulation of the Vaccine that is approved pursuant to the Required Regulatory Approval. If multiple Vaccine Dose Formulations are approved which vary based on the age or other demographic of the intended recipient population, Arcturus and the MOH will discuss how many Vaccine Doses are to be shipped for each such approved dosage formulation of the Vaccine.

Article II
PURCHASE AND SUPPLY OF VACCINE DOSES

2.1 Purchase of Initial Reserve Doses of Approved Vaccine.

(a) the MOH is hereby agreeing to purchase, and securing access to, Vaccine Doses from Arcturus for use by the MOH in the Territory (the "***Initial Reserve Doses***").

(b) the MOH will purchase [***] Initial Reserve Doses (the "***Initial Reserve Amount***"); [***].

(c) If (i) the MOH does not exercise its right to reduce the Initial Reserve Amount to [***] and (ii) if the Vaccine Dose Formulation is equal to or less than [***] µg, the Initial Reserve Amount will be increased from [***] Initial Reserve Doses to [***] Initial Reserve Doses at no additional cost to the MOH.

(d) Arcturus will deliver the Initial Reserve Doses to the MOH pursuant to the terms of this Agreement, including Section 2.4.

2.2 Right to Purchase Additional Reserve Doses of Approved Vaccine. Upon written notice to Arcturus at any time during the Reserve Period, the MOH will be entitled to purchase an additional [***] Vaccine Doses (the "***Additional Reserve Doses***") from Arcturus for use in the Territory. Arcturus will deliver the Additional Reserve Doses to the MOH pursuant to the terms of this Agreement, including Section 2.4.

2.3 Right to Purchase Stockpiling Doses of Approved Vaccine. Upon written notice to Arcturus at any time during the Stockpiling Period, the MOH will be entitled to purchase up to an additional [***] Vaccine Doses (the "***Stockpiling Doses***") from Arcturus for use in the Territory. Arcturus will deliver the Stockpiling Doses to the MOH pursuant to the terms of this Agreement, including Section 2.4.

2.4 Arcturus Preferred Distribution List. [***].

2.5 Other Related Services. Arcturus may provide other related products and services to the MOH, other than the Initial Reserve Doses, the Additional Reserve Doses (if any) and the Stockpiling Doses (if any), as may be agreed to in writing by the Parties from time to time. Such writing shall include the scope and fees for any such products and services and shall be appended to this Agreement or set forth in a separate agreement.

2.6 Escrow Agent and Escrow Agreement. Arcturus and the MOH will jointly appoint an escrow agent selected by Arcturus, who shall be acceptable to the MOH, to serve as the escrow agent (the "***Escrow Agent***") pursuant to the terms of an Escrow Agreement to be executed by Arcturus, the MOH and

the Escrow Agent (the "***Escrow Agreement***"). The Escrow Agreement will provide that the MOH will pay portions of the Vaccine purchase price to the Escrow Agent pursuant to the terms of Article VI.

Article III
MANUFACTURING OF VACCINE DOSES

3.1 Manufacturing Responsibility. Arcturus shall be responsible, at its sole cost and expense, for Manufacture, inspecting, testing and delivering the Vaccine in compliance with this Agreement, the Specifications, cGMPs and all applicable Laws as may be reasonably necessary to enable Arcturus to deliver to the MOH the Initial Reserve Doses, the Additional Reserve Doses (if any) and the Stockpiling Doses (if any) pursuant to the terms and conditions of this Agreement.

3.2 Facilities. Arcturus shall ensure that the Manufacture of all Vaccine Doses takes place in a facility approved in accordance with cGMP by at least one of the Specified Regulatory Agencies, selected by Arcturus, and operating in compliance with all applicable Laws.

3.3 Subcontracting. [***].

Article IV
CLINICAL TRIALS AND REGULATORY APPROVAL

4.1 Clinical Trials Arcturus is fully responsible for all costs and expenses of, and the administration of, the Clinical Trial and any other clinical trials initiated by Arcturus or its Affiliates or licensees other than the MOH. Any clinical trial that may be initiated or sponsored and paid for by the MOH will be on terms approved in advance by Arcturus in a separate agreement.

4.2 Regulatory Approvals. [***].

4.3 Notice Obligations. Arcturus will provide the MOH with prompt written notice of its receipt of any Required Regulatory Approval or that Arcturus and its Affiliates have discontinued worldwide clinical development of the Vaccine due to clinical failure or otherwise.

4.4 Pharmacovigilance. The Parties will cooperate with regard to the reporting and handling of safety information involving the Vaccine in accordance with applicable Laws on pharmacovigilance and clinical safety. Upon either Party's written request, the Parties will negotiate in good faith and enter into an SDEA within such time period as is necessary to ensure that all regulatory requirements are met (but in no event later than ninety (90) days after the date of such written request), which will define the pharmacovigilance responsibilities of the Parties and include safety data exchange procedures governing the exchange of information affecting the Vaccine (including serious adverse events and emerging safety issues to enable each Party to comply with all of its legal and regulatory obligations related to the Vaccine).

4.5 Records and Data. Arcturus shall provide to the MOH all Manufacture and clinical records and data reasonably requested by the MOH. Arcturus will make available to the MOH all preclinical and clinical data reasonably requested by the MOH.

4.6 Recordkeeping. Arcturus shall maintain materially complete and accurate books, records, test and laboratory data, reports and all other information relating to Manufacture and clinical trials, including all information required to be maintained by Laws, in accordance with Arcturus standard operating procedures. Such information shall be maintained in forms, notebooks and records for the longer of (a) a period of at least two (2) years from the relevant Vaccine expiration date, (b) a period of five (5) years after the last delivery of the Vaccine Doses under this Agreement, or (c) as required under applicable

Laws. The Parties will each maintain records necessary to permit a Recall of any Vaccine Doses provided under this Agreement.

4.7 Recall. In the event either Party believes a recall, field alert, Vaccine Doses withdrawal or field correction ("***Recall***") may be necessary with respect to any Vaccine Doses provided under this Agreement, it shall immediately notify the other Party in writing. [***].

4.8 Cooperation. Each Party agrees to (a) make its personnel reasonably available at their respective places of employment to consult with the other Party on issues related to the activities conducted in accordance with this Article IV or otherwise relating to the development of the Vaccine and the Vaccine Doses and thereafter in connection with any request from any Regulatory Authority, including with respect to regulatory, scientific, technical and clinical testing issues, or otherwise, and (b) otherwise provide such assistance as may be reasonably requested by the other from time-to-time in connection with the activities to be conducted under this Article IV or otherwise relating to the development of the Vaccine and the Vaccine Doses and obtaining the Required Regulatory Approvals, including providing requested information to, and collaborating with, the applicable Specified Regulatory Agencies in connection with seeking the Required Regulatory Approvals.

Article V
DELIVERY

5.1 Cooperation on Delivery Dates. Arcturus will keep the MOH updated on a regular basis regarding the expected delivery dates for Vaccine Doses and the MOH will keep Arcturus updated on a regular basis regarding the process of Regulatory Approvals. Without limiting the foregoing, Arcturus and the MOH will arrange monthly telephonic meetings to discuss timing and status of regulatory approvals and expected delivery dates.

5.2 Location. The Initial Reserve Doses, Additional Reserve Doses (if any) and Stockpiling Doses (if any) will be delivered by, or on behalf of, Arcturus to a single location in the Territory to be mutually agreed upon by Arcturus and the MOH (the "***Specified Location***"). [***].

5.3 Delivery of the Reserved and Stockpiling Doses. [***].

5.4 Expiration Date. Each Vaccine Dose shall have an expiration date that is at least three (3) months from the date of delivery.

5.5 Acceptance/Rejection of Vaccine Doses; Product Claim. The MOH may claim a remedy (a "Product Claim") for any Vaccine Doses delivered to the MOH under this Agreement for which Arcturus did not perform the Manufacturing of the Vaccine Doses in accordance with the Specifications, cGMPs, or applicable Laws (the "Deficient Product"). The MOH will inspect the Vaccine Doses and documentation provided by or on behalf of Arcturus (such documentation shall include: (a) Certificate of analysis including batch release specifications, (b) batch release document signed by the responsible professional, (c) Manufacturing deviations, (d) official batch release certificate by the competent authority, (e) a cGMP certificate, (f) shipping and storage data and (g) such other documentation as shall be reasonably requested by the MOH at least fourteen (14) days prior to delivery to the extent that such information can be reasonably provided by Arcturus without any material expense and without delaying the delivery date) upon delivery and will give Arcturus written notice of all Product Claims (if any) within thirty (30) days after such delivery (or, in the case of any deficiency at the time of delivery to the MOH under this Agreement that was not reasonably susceptible to discovery upon such delivery, within thirty (30) days after discovery by the MOH). If the MOH fails to provide a Product Claim within the applicable thirty (30) days period, then the Vaccine Doses will be considered to have been accepted by the MOH on the thirtieth (30th) day

after delivery. If the MOH makes a Product Claim under this Section 5.4, Arcturus will either (i) promptly replace the Deficient Product at Arcturus's cost within sixty (60) days of the date of such Product Claim or (ii) provide the MOH with a rejection notice with respect to such Product Claim. If Arcturus provides a rejection notice with respect to a Product Claim, the Parties shall cooperate in good faith to resolve such dispute within thirty (30) days of delivery by Arcturus of a rejection notice.

5.6 Legal Title. Title and risk of loss to the Initial Reserve Doses, Additional Reserve Doses (if any) and Stockpiling Doses (if any) shall transfer to the MOH upon delivery of the applicable Vaccine Doses to the Specified Location through shipping methods selected by Arcturus and reasonably agreed to by the MOH. Arcturus will remain responsible for the Vaccine Doses and any associated risk of loss until delivery of the Vaccine Doses to the Specified Location. Delivery of the Vaccine Doses will be complete when the Vaccine Doses have been delivered to the MOH at the Specified Location using the agreed upon shipping methods. The MOH will be the importer of record for the Initial Reserve Doses, Additional Reserve Doses (if any) and Stockpiling Doses (if any) and shall be solely responsible for import clearance with respect to the Initial Reserve Doses, Additional Reserve Doses (if any) and Stockpiling Doses (if any). The Escrow Agreement will provide that the applicable escrowed funds will not be released until [***] after Arcturus notifies the Escrow Agent that the applicable Vaccine Doses have been delivered to the MOH at the Specified Location using the agreed upon shipping methods and evidence that such delivery has been accepted by the MOH; provided that the Escrow Agreement will provide that the if the MOH notifies the Escrow Agent of any good faith dispute as to the completion of the required delivery of the applicable Vaccine Doses to the MOH at the Specified Location using the agreed upon shipping methods, the Escrow Agent will not release the applicable funds until such dispute has been resolved.

5.7 Shipping and Handling Costs. Arcturus will be solely responsible for shipping the Vaccine Doses and for all shipping and handling costs incurred to ship the Initial Reserve Doses, Additional Reserve Doses (if any) and Stockpiling Doses (if any) to the Specified Location.

Article VI
PAYMENTS

6.1 General. The price per Vaccine Dose to be paid by the MOH is not dependent on the dosage size and it calculated instead on a dose by dose basis subject to the definition of "Vaccine Dose" and the illustrative examples set forth therein; provided that pursuant to Section 2.1(c), If (a) the MOH does not exercise its right to reduce the Initial Reserve Amount to [***] and (b) if the Vaccine Dose Formulation is equal to or less than [***] µg, the Initial Reserve Amount will be increased from [***] Initial Reserve Doses to [***] Initial Reserve Doses at no additional cost to the MOH.

6.2 Payment for Initial Reserve Doses. [***].

6.3 Payment for Additional Reserve Doses. [***].

6.4 Payment for Stockpiling Doses. [***].

6.5 Payment in United States Dollars. The MOH shall make all payments required by this Agreement in United States dollars, by bank wire transfer in immediately available funds as directed in the applicable written invoice. In the event that any payment is not received by Arcturus on or before the applicable due date, then Arcturus may, in addition to any other remedies available at equity or in law or set forth in this Agreement, at its option, charge interest on the outstanding sum from the due date (both before and after any judgment) at [***] (including any partial month) until paid in full (or, if less, the maximum amount permitted by applicable Law).

6.6 Taxes. [***].

Article VII
REPRESENTATIONS AND WARRANTIES

7.1 MOH Representations and Warranties. The MOH represents and warrants to Arcturus as follows:

(a) The MOH has all requisite power and authority to enter into this Agreement. The person signing this Agreement has the necessary authority to legally bind the MOH to the terms set forth herein.

(b) The MOH's execution of this Agreement and performance of the terms set forth herein will not cause the MOH to be in conflict with or constitute a breach of its constitutional documents nor any other agreement, court order, consent decree or other arrangement, whether written or oral, by which it is bound.

(c) The MOH's execution of this Agreement and performance hereunder are in, and will be in, compliance with all applicable Laws in all material respects.

(d) This Agreement is its legal, valid and binding obligation, enforceable against the MOH in accordance with the terms and conditions hereof.

7.2 Arcturus Representations and Warranties. Arcturus represents and warrants to the MOH as follows:

(a) Arcturus is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware.

(b) Arcturus has all requisite power and authority to enter into this Agreement and has the requisite skill, knowledge, staffing, financial resources, capacity and ability to carry out its obligations hereunder. The person signing this Agreement has the necessary authority to legally bind Arcturus to the terms set forth herein.

(c) Arcturus's execution of this Agreement and performance of the terms set forth herein will not cause Arcturus to be in conflict with or constitute a breach of its organizational documents nor any other agreement, court order, consent decree or other arrangement, whether written or oral, by which it is bound.

(d) Arcturus's execution of this Agreement and performance hereunder are in, and will be in, compliance with any applicable Law in all material respects.

(e) As of the Effective Date, to the best of Arcturus's knowledge, the Manufacture, export, import and use of the Vaccine and the Vaccine Doses does not infringe any third party patents. Arcturus shall not violate the trade secrets, or any other proprietary rights, of any third party in Manufacture and delivery of the Vaccine Doses pursuant to this Agreement.

(f) Arcturus is not debarred and Arcturus has not and will not use in any capacity the services of any person debarred under subsection 306(a) or (b) of the U.S. Generic Drug Enforcement Act of 1992, or other applicable Law, nor have debarment proceedings against Arcturus or any of its employees or permitted subcontractors been commenced.

(g) This Agreement is its legal, valid and binding obligation, enforceable against Arcturus in accordance with the terms and conditions hereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' rights generally or by the principles governing the availability of equitable remedies.

(h) As of the Effective Date, there are no claims, judgments or settlements against or owed by Arcturus or its Affiliates, or pending or, to the best of Arcturus's knowledge, threatened claims or litigation, relating to the Vaccine or the Vaccine Doses.

(i) The Vaccine Doses (until the expiration date thereof) supplied by Arcturus under this Agreement (and the Manufacture thereof) shall be free from defects in material and workmanship. The Vaccine Doses supplied by Arcturus under this Agreement (other than developmental quantities not required to be produced in accordance with cGMPs) shall, upon tender of delivery, conform to and shall have been processed and, if applicable, packaged, in conformance with cGMPs, the Specifications, and in accordance with all applicable Laws. The Vaccine Doses shall not be adulterated or misbranded by Arcturus.

(j) All Vaccine Doses delivered hereunder shall be free and clear of all security interests, liens, or other encumbrances of any kind or character.

7.3 Disclaimer. EACH PARTY AGREES AND ACKNOWLEDGES THAT, EXCEPT AS SET FORTH IN THIS ARTICLE VII, NEITHER PARTY MAKES ANY REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER, IMPLIED OR STATUTORY, AND EACH PARTY HEREBY EXPRESSLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AGAINST NON-INFRINGEMENT OR THE LIKE, OR ARISING FROM COURSE OF PERFORMANCE.

Article VIII
INDEMNIFICATION

[***].

Article IX
CONFIDENTIALITY AND PUBLICITY

9.1 Obligations of Confidentiality. From the Effective Date and for a period of ten (10) years, or for a perpetual time with respect to trade secrets, after this Agreement terminates, each Party and its Affiliates shall:

(a) keep the Confidential Information of the other Party or its Affiliates strictly confidential;

(b) not disclose the Confidential Information of the disclosing Party to any other person or entity other than with the prior written consent of the disclosing Party; and

(c) not use the Confidential Information of the disclosing Party for any purpose other than the performance of its obligations under this Agreement.

9.2 Representatives. During the Term of this Agreement the receiving Party may disclose the Confidential Information of the disclosing Party to its Affiliates and Representatives to the extent that it is

necessary for the purposes of this Agreement. The Party disclosing the information to its Representatives shall ensure that each Representative is made aware of and complies with the receiving Party's obligations of confidentiality under this Agreement. Each receiving Party shall be responsible for any breach of this Article IX by its Representatives.

9.3 Permitted Disclosures.

(a) The obligations imposed by this Article IX upon the receiving Party shall not apply to any Confidential Information of the disclosing Party which:

(i) is in or comes into the public domain other than as a result of a breach of this Agreement;

(ii) is known to the receiving Party prior to obtaining the same from the disclosing Party, as demonstrated by written records; or

(iii) is obtained by the receiving Party from a third party who is not obligated to keep the information confidential.

(b) A receiving Party may disclose Confidential Information of the disclosing Party if it is required to disclose such Confidential Information by applicable Law or a valid order of a court, provided that (to the extent permitted by applicable Law) the receiving Party promptly notifies the disclosing Party in writing of the requirement of such disclosure, takes reasonable and lawful actions to avoid or minimize the degree of such disclosure and to have confidential treatment accorded to any Confidential Information disclosed, and cooperates fully with the disclosing Party in connection with the disclosing Party's efforts to apply for a protective order or take other appropriate action to restrict disclosure of the Confidential Information.

9.4 Press Releases. Each Party agrees to consult with the other party with respect to the text and timing of any press release that may be made by such party with respect to the entry into this Agreement or the purchase by the MOH of Vaccine Doses from Arcturus.

9.5 Filing of this Agreement. [***].

Article X
INTELLECTUAL PROPERTY

10.1 Arcturus Existing Intellectual Property. All Intellectual Property rights that are owned or controlled by Arcturus at the commencement of this Agreement shall remain under the ownership or control of Arcturus throughout the Term and thereafter. For clarity, all Intellectual Property related to the Vaccine, the Vaccine Doses or the Manufacture of the Vaccine or the Vaccine Doses that exist as of the Effective Date shall be deemed Arcturus's Intellectual Property and Arcturus shall retain and own and have the exclusive right, title and interest in and to all such Intellectual Property.

10.2 New Intellectual Property. All new Intellectual Property that is generated, developed, conceived or reduced to practice under this Agreement that (a) is related to the Vaccine, the Vaccine Doses or the Manufacture of the Vaccine or the Vaccine Doses, including any modifications or improvements to any of the foregoing or (b) that is otherwise based on, uses or incorporates any of Arcturus' Confidential Information, shall be deemed to be "Arcturus's Intellectual Property", and shall be the exclusive property of Arcturus.

Article XI
TERM AND TERMINATION

11.1 Term. This Agreement shall commence on the Effective Date and shall continue until the date that Arcturus completes the delivery of all Vaccine Doses that are to be delivered to the MOH pursuant to this Agreement (the "***Term***").

[***].

Article XII
FORCE MAJEURE

[***].

Article XIII
MISCELLANEOUS

13.1 Notice. Any notice, request, instruction or other document to be given hereunder by any party to the other shall be in writing and delivered personally or sent by registered or certified mail, postage prepaid, by electronic mail or overnight courier:

(a) If to Arcturus:

Arcturus Therapeutics, Inc.
10628 Science Center Drive, Suite 250
San Diego, CA 92121
Attn: Joseph E. Payne, President & CEO
Email: [***]

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

Dentons US LLP
1221 Avenue of the Americas
New York, NY 10020
Attention: Jeffrey A Baumel, Esq.
Email: Jeffrey.baumel@dentons.com

(b) If to the MOH:

Ministry of Health
39 Yirmiyahu St. Jerusalem 9446724
Attention: [***]
Email: [***]; [***]

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

Ministry of Health
39 Yirmiyahu St. Jerusalem 9446724
Attention: Legal Department
Email: [***]

Director General

Email: [***]

In case the notice pertains to any action under Section 13.6, the notice must also be sent to:

Administration of Courts
Legal Assistance to Foreign Countries
22 Kanfei Nesharin St.
Jerusalem 9546435
Israel
Attention: Legal adviser for the Administrator of Courts
Email: [***]
[***]

or to such other persons or addresses as may be designated in writing by the party to receive such notice as provided above. Any notice, request, instruction or other document given as provided above shall be deemed given to the receiving party upon actual receipt, if delivered personally; three (3) Business Days after deposit in the mail, if sent by registered or certified mail; upon confirmation of successful transmission if sent by electronic mail; or on the next Business Day after deposit with an overnight courier, if sent by an overnight courier.

13.2 Assignment. Neither this Agreement, any rights nor any interest hereunder shall be assignable by either Party without prior written consent of the other Party, such consent not to be unreasonably withheld, except that this Agreement may be assigned by Arcturus without the MOH's prior written consent to a third party that acquires all or substantially all of Arcturus' assets and provided that such third party is not listed on the Specially Designated Nationals And Blocked Persons List maintained by the Office of Foreign Assets Control of the US Department of the Treasury. This Agreement shall be binding upon the successors and permitted assigns of the Parties and the name of a Party appearing herein shall be deemed to include the name of such Party's successors and permitted assigns to the extent necessary to carry out the intent of this Agreement. Any assignment that does not comply with this Section 13.2 shall be void.

13.3 Further Actions. Each Party agrees to execute, acknowledge and deliver such further instruments, and to do all such other acts, as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

13.4 Waiver. No provision of this Agreement shall be waived by any act, omission or knowledge of any Party or its agents or employees except by an instrument in writing expressly waiving such provision and signed by a duly authorized officer of the waiving Party.

13.5 Descriptive Headings. The descriptive headings of this Agreement are for convenience only, and shall be of no force or effect in construing or interpreting any of the provisions of this Agreement.

13.6 Governing Law and Venue; Waiver of Jury Trial. [***].

13.7 Severability. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be prohibited by or invalid under applicable law, such provision will be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of this Agreement.

13.8 Independent Contractors. This relationship between Parties created by this Agreement is one of independent contractors and neither Party shall have the power or authority to bind or obligate the other except as expressly set forth in this Agreement.

13.9 Entire Agreement; Amendments. This Agreement, SDEA and the Escrow Agreement, constitutes the entire understanding and agreement between the parties with respect to the subject matter of this Agreement and supersede any and all prior agreements, understandings and arrangements, whether oral or written, between the parties relating to the subject matter of this Agreement. No term of this Agreement may be amended except upon written agreement of both Parties, unless otherwise expressly provided in this Agreement.

13.10 Counterparts. This Agreement 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 Agreement made by reliable means (e.g., photocopy, portable document format (PDF) or facsimile) is considered an original.

[Signature page follows]

To evidence their agreement to be bound by this Agreement, the MOH and Arcturus have executed and delivered this Agreement as of the Effective Date.

ARCTURUS THERAPEUTICS, INC.	ISRAELI MINISTRY OF HEALTH
By:	By:
Name:	Name:
Its:	Its:

CERTAIN INFORMATION IDENTIFIED
BY BRACKETED ASTERISKS ([* * *])
HAS BEEN OMITTED FROM THIS EXHIBIT BECAUSE
IT IS BOTH NOT MATERIAL AND WOULD BE
COMPETITIVELY HARMFUL IF PUBLICLY DISCLOSED.

Exhibit 10.33

DATED THIS 7th DAY OF November 2020

Between

ARCTURUS THERAPEUTICS, INC.
as Company

and

ECONOMIC DEVELOPMENT BOARD
as Board

MANUFACTURING SUPPORT AGREEMENT

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THIS MANUFACTURING SUPPORT AGREEMENT (this "**Agreement**") is made on 2020

BETWEEN:

(1) **ARCTURUS THERAPEUTICS, INC.,** a Delaware corporation (Delaware file no.: 5285465) located at 10628 Science Center Drive, Suite 250, San Diego, California 92121, USA, as the company (the "**Company**"); and

(2) **ECONOMIC DEVELOPMENT BOARD**, a statutory board established in the Republic of Singapore pursuant to the Economic Development Board Act (Cap. 85) of 250, North Bridge Road, #28-00 Raffles City Tower, Singapore 179101 (hereinafter called the "**Board**").

WHEREAS:

(A) The Company is a messenger RNA medicines company focused on the discovery, development and commercialization of therapeutics for rare diseases and vaccines.

(B) The Company is currently developing a vaccine candidate, known as LUNAR-COV19, against SARS-CoV-2 that utilizes the Company's self-transcribing and replicating internal messenger RNA (STARR™) technology and the Company's LUNAR® lipid-mediated delivery in order to produce a SARS-CoV-2 coronavirus vaccine (as further described in the Letters of Award (defined below)) (the "**Vaccine**").

(C) The Company has commenced a Phase 1/2 clinical trial of the Vaccine in Singapore under the authority of the Singapore Health Sciences Authority.

(D) The Company was awarded a grant from the Board to support the Vaccine under the Letter of Award for the Innovation Development Scheme dated [***] as amended by the [***] (collectively, the "**1st Letter of Award**", as may be amended and/or supplemented from time to time), which provides, among other things, that: [***].

(E) The Board is willing to grant an "at-risk" term loan facility up to a maximum aggregate principal amount of US$45,000,000 (the "**Term Loan Facility**") to the Company, upon the terms and subject to the conditions hereinafter set forth.

IT IS AGREED as follows:

1. DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this Agreement, unless the context otherwise requires, the following words or expressions shall have the following meanings respectively:

"**2nd Letter of Award**" means the Letter of Award for the [***] granted by the Board to the Company, as may be amended and/or supplemented from time to time.

"**Affiliate**" means, in relation to a Person, any Person Controlling, Controlled by, or under common Control with such Person.

"**Asset Transfer Agreement**" has the meaning ascribed to it in Clause 11.4.

"**Authorisation**" means:

(a) an authorisation, consent, approval, resolution, licence, exemption, filing, notarisation, lodgement or registration; or

(b) in relation to anything which will be fully or partly prohibited or restricted by law or regulation if a Governmental Agency intervenes or acts in any way within a specified period after lodgement, filing, registration or notification, the expiry of that period without intervention or action.

"**Availability Period**" means the period from and including the date of this Agreement to and including the date falling sixty (60) days after the date of this Agreement (or such later date as the Board may agree).

"**Business Day**" means a day on which banks in Singapore and the City of New York, New York are open for general business excluding Saturdays, Sundays and public holidays in Singapore and the City of New York, New York.

"**Charged Property**" means the Specified Manufacturing Assets and any other property over which Security is expressed to be created pursuant to any Security Document.

“**Commercially Reasonable Efforts**” shall mean, with respect to a task related to the Vaccine, the efforts required to carry out such task in a manner that is commensurate with the level of efforts that a pharmaceutical company of comparable size and resources as those of the Company would reasonably and customarily devote to a product of similar potential and having similar commercial and clinical advantages and disadvantages resulting from such company’s own research efforts, taking into account its safety, tolerability and efficacy, clinical trial results and related adverse events, its proprietary position and profitability, the competitiveness of alternative third party products, the regulatory environment, reasonable expectations regarding the current global pandemic and other relevant considerations, including technical, commercial, legal, clinical, scientific and/or medical factors.

“**Company Authorized Signatory**” means any director of the Company, the Company’s Chief Executive Officer, the Company’s Chief Financial Officer or any Senior Vice President or Executive Vice President of the Company.

"**Control**" or "**Controlling**" means:

(a) owning (directly or indirectly) at least 50% of the issued share capital or other ownership interest in a Person; or

(b) the ability (whether through ownership of shares, proxy, contract, agency or otherwise) of a person to:

(i) cast, or control the casting of, more than 50% of the maximum number of votes that might be cast at a general meeting of another Person;

(ii) direct the affairs of that other Person; and/or

(iii) control the composition of the board of directors or equivalent body (whether or not it actually exercises such control) of that other Person,

and "Controlled by" shall bear the corresponding meaning accordingly.

"**Day**" or "**day**" means a calendar day.

"**Default**" means an Event of Default or any event or circumstance specified in Clause 16 hereof which would (with the lapse of time, the giving of notice, the making of any determination under this Agreement or any combination of any of the foregoing) be an Event of Default.

"**Drawdown Date**" means the date of the Drawing.

"**Drawing**" means the advance drawing made by the Company under the Term Loan Facility.

"**Eligible Manufacturing Activities**" means:

(a) the purchase of any equipment or materials in connection with the Manufacture of the Vaccine (whether prior to or after the date of this Agreement);

(b) any payment (including any deposits) to a third party in connection with the Manufacture of the Vaccine (whether prior to or after the date of this Agreement); and

(c) any other related activities undertaken by the Company to enable the Company or its third party contractors to Manufacture the Vaccine with the prior written consent of the Board.

"**Equipment**" means all equipment used to Manufacture or ship Vaccine Doses.

"**Event of Default**" and "**Events of Default**" mean any, each or all (as the context may require) of the Events of Default described in Clause 16 hereof.

"**Final Repayment Date**" means the last day of the Loan Period.

"**Finance Documents**" means this Agreement, any Security Document and any other document designated as such by the Board and the Company.

"**GAAP**" means generally accepted accounting principles in the US as in effect from time to time.

"**General Regulatory Approval**" means the approvals and authorizations that are necessary for the importation, marketing and use of the Vaccine for emergency, conditional or permanent use from any jurisdiction in the world.

"**Government of Singapore**" means the Government of the Republic of Singapore as a whole, including all its ministries, government departments and organs of state. For the avoidance of doubt, a reference to "**Government of Singapore**" does not include any Statutory Boards.

"**Governmental Agency**" means any government or any governmental agency, semi-governmental or judicial entity or authority (including, without limitation, any stock exchange or any self-regulatory organisation established under any law or regulation).

"**Insolvency Proceeding**" means any proceeding commenced by or against any person or entity (including such person itself) under any provision of the United States Bankruptcy Code, as amended, or under any other bankruptcy or insolvency law, as well as:

(a) proceedings seeking the suspension of payments or a moratorium of any indebtedness and/or including assignments for the benefit of creditors;

(b) procedures for the reorganisation (by way of voluntary arrangement, scheme of arrangement or otherwise) (excluding any solvent liquidation or reorganisation where such person is the surviving legal entity and there is no Material Adverse Effect); or

(c) the appointment of a liquidator (other than for the purposes of any solvent liquidation or reorganisation where the appointment is in respect of the person that is the surviving legal entity and there is no Material Adverse Effect), receiver, administrative receiver, administrator, compulsory manager, judicial manager or other similar officer.

"**Interest Payment Date**" means the last day of each financial year of the Company.

"**Interest Period**" means, in relation to the Loan, each period starting on an Interest Payment Date and ending on the date immediately preceding the next Interest Payment Date except that (1) the first interest period in relation to the Loan shall start on the Drawdown Date and end on the Interest Payment Date first occurring after the Drawdown Date; and (2) no Interest Period shall extend beyond the Final Repayment Date.

"**Interest Rate**" means an interest rate of [***]% per annum.

"**Letters of Awards**" means the 1st Letter of Award, the 2nd Letter of Award and any other Letter of Award granted by the Board from time to time to the Company in relation to the Project.

"**Loan**" means the loan made or to be made under the Term Loan Facility or the principal amount outstanding for the time being of that loan.

"**Loan Period**" has the meaning set out in Clause 2.

"**Manufacture**" means all processes and procedures for the production of the Vaccine vialled as a lyophilized product (or in such other formulation (i.e., a frozen product) or form, in each case, as approved by the Health Science Authority of Singapore) for late stage clinical trials and/or commercial use, including (i) the supply and quality control of materials (including Raw Materials) used in the manufacture of the Vaccine, (ii) the manufacture of the Vaccine, (iii) fill, finish and lyophilization, (iv) quality control and release of the Vaccine and (v) the storage of the Vaccine until shipment.

"**Manufacturing Slot**" means a manufacturing run involving the use of designated capacity at a third-party contract manufacturer's manufacturing site during a designated time period for the Manufacture of the Vaccine.

"**Material Adverse Effect**" means a material adverse effect on or material adverse change in:

(a) the financial condition, assets or business of the Company;

(b) the ability of the Company to perform and comply with its payment or other material obligations under any Transaction Document;

(c) the validity, legality or enforceability of any Transaction Document; or

(d) the validity, legality or enforceability of any Security expressed to be created pursuant to any Security Document or on the priority or ranking of any of that Security.

"**Month**" or "**month**" means a calendar month.

"**Net Sales Proceeds**" means the proceeds actually earned by the Company or its Affiliates in connection with any Vaccine Sale after deducting:

(a) allowances actually granted to customers for rejections, returns, chargebacks, defects, recalls, rebates or prompt payment and volume discounts;

(b) commissions and fees payable to any third-party providing distribution services or sales brokering services to the Company or its Affiliates;

(c) royalties payable by the Company or its Affiliates to any Person (other than to an Affiliate of the Company) in connection with the Vaccine Sale;

(d) rebates and administrative fees paid to pharmacies, managed health care organizations, group purchasing organizations, trade customers, large employers, long-term care organizations, formularies, insurers, government agencies and programs (e.g., Medicare and the VHA and other federal, state and local agencies);

(e) freight, transport packing, insurance charges and related charges associated with transportation; and

(f) Taxes, other than Taxes assessed on income derived from the Vaccine Sales.

"**Permitted Change of Control**" means any acquisition of more than 50% of the equity interests in the Company or its parent company, Arcturus Therapeutics Holdings Inc., by any means (including amalgamation or merger) by any third party that is either publicly traded on a U.S. nationally recognised stock exchange or has net assets that are equal to or in excess of the net assets owned by the Company as of the date of the applicable transaction.

"**Person**" shall include an individual, corporation, company, partnership, limited liability partnership, firm, trustee, executor, administrator or other legal personal representative, unincorporated association, joint venture, syndicate or other business enterprise, any governmental, administrative or regulatory authority or agency and their respective successors, legal personal representatives and assigns, as the case may be.

"**Project**" means the development of the Vaccine and the Manufacture of the Vaccine.

"**Raw Materials**" means all raw materials (which, for avoidance of doubt, does not include drug substance), supplies, components and packaging used to Manufacture and ship Vaccine Doses.

"**Reconciliation Date**" means:

(a) [***]; or

(b) such later date agreed between the Company and the Board pursuant to Clause 10.7 below.

"**Regulatory Approval Date**" means [***].

"**Security**" means a mortgage, charge, pledge, lien, fiduciary security, assignment, hypothecation or other security interest securing any obligation of any person or any other agreement or arrangement having a similar effect.

"**Security Agreement**" means a security agreement entered or to be entered into by the Company in favour of the Board which provides that the obligation to repay the Loan and the other obligations under the Transaction Documents will be secured by an interest in the Raw Materials and Equipment purchased by the Company with the funds from the Loan and other Charged Property described therein, in form and substance satisfactory to the Board in its sole discretion.

"**Security Documents**" means the Security Agreement and any other document providing for Security over Charged Property that may at any time be given as security or assurance for all amounts owing pursuant to or in connection with any Transaction Document.

"**[***]**" means [***].

"**Specified Manufacturing Assets**" means:

(a) Raw Materials or Equipment purchased by the Company with the funds from the Loan that are (i) in the possession of the Company on the Regulatory Approval Date and (ii) not expired, worn-out or obsolete as of the Regulatory Approval Date; and

(b) any Manufacturing Slots purchased with the funds from the Loan.

"**Specified Regulatory Approval**" means:

(a) [***]; or

(b) [***].

"**Statutory Board**" means a body corporate established by or under written law to perform or discharge any public function under the supervisory charge of a Ministry or organ of state of the Republic of Singapore.

"**Taxes**" means all taxes and duties that are assessed by any national, federal, state, local or non-US Governmental Agency, including sales, use, excise, value-added and withholding taxes.

"**Transaction Documents**" means the Finance Documents and the [***].

"**Transfer Assets**" has the meaning ascribed to it in Clause 11.4.

"**US**" means the United States of America.

"**US$**" or "**USD**" means United States Dollars, being the lawful currency of the US.

"**Vaccine Dose**" means a dose of the Vaccine to be delivered to the Board or the Government of Singapore pursuant to the terms and conditions of the [***].

"**Vaccine Sale**" means any sale, as determined in accordance with GAAP, of any quantity of the Vaccine by the Company or its Affiliates to any Person for use in a country following General

Regulatory Approval in such country (including any sale to the Board, the Government of Singapore or any agency thereof or corporation majority-owned by any of the aforesaid).

"**Western Alliance Agreement**" means that certain Loan and Security Agreement, dated as of October 12, 2018, between Western Alliance Bank and the Company, as amended, supplemented or otherwise modified.

"**Written Notice**" has the meaning set out in Clause 5.2(b).

"**Year**" or "**year**" means a calendar year.

1.2 Construction

(a) Unless a contrary indication appears, any reference in this Agreement to:

(i) the "**Company**" or the "**Board**" shall be construed so as to include its successors in title, permitted assigns and permitted transferees;

(ii) "**including**" shall be construed as "including without limitation" (and cognate expressions shall be construed similarly);

(iii) "**indebtedness**" includes any obligation (whether incurred as principal or as surety) for the payment or repayment of money, whether present or future, actual or contingent;

(iv) a "**regulation**" includes any regulation, rule, official directive, request or guideline (whether or not having the force of law) of any governmental, intergovernmental or supranational body, agency, department or regulatory, self-regulatory or other authority or organisation;

(v) a "**Finance Document**" or a "**Transaction Document**" or any other agreement or instrument is a reference to that Finance Document or Transaction Document or other agreement or instrument as amended, novated, supplemented, extended, restated (however fundamentally and whether or not more onerous) or replaced and includes any change in the purpose of, any extension of or any increase in any facility or the addition of any new facility under any Finance Document or Transaction Document or other agreement or instrument;

(vi) a provision of law is a reference to that provision as amended or re-enacted; and

(vii) a time of day is a reference to Singapore time unless otherwise stated.

(b) Unless the context otherwise requires, words importing the singular number include the plural number and vice versa.

(c) The words "**hereof**", "**herein**", "**hereon**" and "**hereafter**" and words of similar import, when used in this Agreement, refer to this Agreement as a whole and not to any particular provision of this Agreement.

(d) The headings to the Clauses hereof shall not be deemed part thereof or be taken in consideration in the interpretation or construction thereof or of this Agreement.

(e) Reference herein to Clauses are references to Clauses of this Agreement.

(f) A Default is "**continuing**" if it has not been remedied or waived.

1.3 Third Party Rights

(a) Unless expressly provided to the contrary in this Agreement, a person who is not a party to this Agreement has no right under the Contracts (Rights of Third Parties) Act, Chapter 53B of Singapore to enforce or to enjoy the benefit of any term of this Agreement.

(b) Notwithstanding any terms of this Agreement, the consent of any third party is not required for any variation (including any release or compromise of any liability under) or termination of this Agreement.

2. TERM LOAN FACILITY

Subject to the provisions of this Agreement (including Clause 11), the Board shall make available to the Company the Term Loan Facility at the times and in the manner as hereinafter provided. The Term Loan Facility shall be for a period of sixty (60) Months (the "**Loan Period**") commencing from the Drawdown Date. The Company agrees that interest shall accrue in accordance with Clause 7.

3. CONDITIONS PRECEDENT AND AVAILABILITY

The Company shall only be allowed to make a single Drawing under the Term Loan Facility, and the obligations of the Board to make available the same shall be subject only to the following conditions precedent to be fulfilled, observed, performed and/or discharged by the Company:

(a) on the date of the Written Notice and the proposed Drawdown Date, no Default is continuing or would result from the proposed Loan;

(b) on the date of the Written Notice and the proposed Drawdown Date, all representations and warranties made by the Company in Clause 13 shall be true and correct in all material respects as of that date or as at the earlier date (if any) at which it is stated;

(c) before the submission of the Written Notice, the Company has provided the following documents in form and substance satisfactory to the Board (acting reasonably):

(i) a copy of the certificate of incorporation of the Company duly certified by the Secretary of State of the State of Delaware and any bylaws of the Company, in each case duly certified by the Secretary of the Company to be a true copy thereof;

(ii) a copy of a good standing certificate of the Company duly certified by the Secretary of State of the State of Delaware, dated a date reasonably close to the proposed Drawdown Date;

(iii) a copy, certified true by the Secretary of the Company, of the resolution of the board of directors of the Company and any other resolutions required by

applicable law or pursuant to the Company's organizational documents**, each of**, which is in full force and effect:

(A) approving the terms and conditions contained in, and the transactions contemplated by, the Transaction Documents and resolving that it execute those Transaction Documents; and

(B) authorising a person or persons to sign the Transaction Documents and any other document (including the Written Notice) to be given to the Board from time to time by the Company;

(iv) specimen signatures of the persons authorised to sign the Transaction Documents on behalf of the Company, and to sign the Written Notice and any other document to be given from time to time by the Company, such specimen signatures to be certified by the Secretary of the Company to be the true signatures of such persons respectively;

(v) a certificate of the Company (signed by a responsible officer) certifying that (A) each document specified in this Clause 3(c)(i) to (iv) is correct, complete and in full force and effect as at the proposed Drawdown Date and (B) all of the conditions set forth in this Section 3 have been fulfilled;

(vi) the Security Agreement duly executed by the parties thereto;

(vii) the [***] duly executed by the parties thereto;

(viii) a solvency certificate duly executed and delivered by the chief financial or accounting responsible officer of the Company in form and substance reasonably satisfactory to the Board;

(ix) a UCC-3 termination statement necessary to release all Security and other rights of any other person in any Charged Property pursuant to the Security Documents, together with such other termination statements as the Board may reasonably request from the Company, including in respect of the Western Alliance Agreement;

(x) a legal opinion to the Board's reasonable satisfaction, dated on the date of this Agreement, provided by a legal practitioner qualified to opine on or behalf of the Company, that *inter alia*, under applicable law(s):

(A) the Company is a validly existing corporation in good standing under the laws of the State of Delaware;

(B) the Company has the corporate power to enter into the Transaction Documents and has duly authorized their execution and delivery, together with the performance of its obligations thereunder;

(C) such obligations are enforceable against the Company;

(D) the execution, delivery and performance of the Transaction Documents will not violate the organizational documents of the Company, any applicable law, judgement or specified material agreements;

(E) no consent or approval is required under applicable law for the execution, delivery and performance by the Company of the Transaction Documents;

(F) the Security Documents create a valid security interest in favour of the Board; and

(G) the financing statements to be filed in connection therewith are effective to perfect such valid security interest.

4. PURPOSE OF THE TERM LOAN FACILITY

4.1 Subject to the provisions of this Agreement, the Term Loan Facility shall be made available by the Board to the Company for the sole purpose of financing the Eligible Manufacturing Activities.

4.2 The Company shall apply all the proceeds from the Loan for the purposes described in Clause 4.1 above and for no other purpose whatsoever.

4.3 It is further agreed that the Term Loan Facility shall be made available to the Company on the understanding that the Company shall implement the Project in accordance with the terms of the Letters of Award and the [***]. For avoidance of doubt, it is acknowledged that the Company is not warranting or guaranteeing that it will be able to achieve regulatory approval of the Vaccine in Singapore, and the failure of the Company to achieve such regulatory approval shall not be deemed a breach of this Agreement, the [***] or the Letters of Award (or trigger any repayment obligations), so long as the Company uses reasonable and diligent efforts to fulfil such objective.

4.4 The Board is not bound but reserves the right to monitor or verify the application of any amount borrowed pursuant to this Agreement in accordance with the terms of this Agreement.

5. DRAWING OF THE TERM LOAN FACILITY

5.1 The Board shall make available the Term Loan Facility for Drawing by the Company, in accordance with the terms and stipulations of this Agreement.

5.2 When the Company intends to make the Drawing, the Company shall be required to:

(a) inform the Board of the intention to make the Drawing in writing, and

(b) give the written notice of the intended Drawing (the "**Written Notice**"), which shall be served on the Board at least forty-five (45) days prior to the intended date of Drawing. The Written Notice shall be substantially in the form set out in Schedule 1 hereto and shall:

(i) state the date (which must be a Business Day within the Availability Period) and the amount of the proposed Drawing (which shall be no more than US$45,000,000);

(ii) be irrevocable;

(iii) commit the Company to borrow the amount and on the date stated;

(iv) constitute a representation and warranty that at the date thereof or as at the date (if any) at which it is stated the warranties and representations set out in Clause 13.1 are true and correct in all material respects and that no Default is continuing or would result from the proposed Loan;

(v) confirm that the conditions precedent set out in Clause 3 have been fulfilled; and

(vi) specify the account and bank to which the proceeds of the Drawing are to be credited.

5.3 The Written Notice shall be delivered together with a statement of projected expenditure on the Eligible Manufacturing Activities in the forms set out in Schedule 2 and Schedule 3, as well as the Company's declaration that there has not been any breach of any conditions precedent under Clause 3. The submission by the Company and the Board's acceptance of the above shall not, in and of itself, constitute a waiver or variation of any of the terms and conditions of this Agreement, or a waiver of any breach thereof.

5.4 In respect of any monies advanced under the Drawing, the Company shall, without demand, within two hundred and forty (240) days from the date of the Drawing, or such extended period as may be permitted by the Board from time to time, submit a statement of expenditure on the Eligible Manufacturing Activities (in the form set out in Schedule 2) duly certified by RSM Chio Lim LP, Deloitte or such other certified public accountant reasonably acceptable to the Board (in the form set out in Schedule 4) pertaining to the amount requested under the Drawing. The Board reserves the right to require the Company to submit copies (certified true by a director of the Company) of the invoices, receipts and such other documents in support of any statement of expenditure.

5.5 The Drawing shall be made no later than the last day of the Availability Period or such later date as may be approved by the Chairman of the Board or his lawful representative.

5.6 The obligation of the Board to make available to the Company the Drawing is further conditional on the Company delivering to the Board:

(a) a solvency certificate updated to a date not earlier than one Business Day before the date of the Drawing, duly executed by the chief financial or accounting responsible officer of the Company in form and substance equivalent to the solvency certificate referred to in Clause 3(c)(viii); and

(b) a certificate of the Company updated to a date not earlier than one Business Day before the date of the Drawing (signed by a responsible officer) certifying that (A) each document specified in Clause 3(c)(i) to (iv) is correct, complete and in full force and effect in form and substance equivalent to the certificate referred to in Clause 3(c)(v).

6. AVAILABILITY OF TERM LOAN FACILITY

Any part of the Term Loan Facility not drawn at the close of business in Singapore on the last day of the Availability Period shall be automatically cancelled.

7. INTEREST

7.1 Subject to Clauses 7.2 and 11 below, the Company shall pay the Board all accrued and unpaid interest on the Loan on the Final Repayment Date.

7.2 Accrued interest shall be added to the principal sum of the Loan on each Interest Payment Date and all references to the “Loan” or principal sums in this Agreement thereafter shall be construed as including such amounts of interest added to the principal sums then outstanding and such interest shall thereafter bear interest accordingly.

7.3 Interest shall be calculated on a daily basis and on the principal amount of the Loan outstanding from time to time, and shall be calculated at the Interest Rate on the basis of a year of three hundred and sixty five (365) days for the actual number of days elapsed.

8. REPAYMENT

Subject to Clause 11 below, the Company shall repay the Loan (including all interest capitalised hereunder) and all other amounts outstanding in connection with the Term Loan Facility (collectively, the "**Final Repayment Amount**") in full on the Final Repayment Date.

9. PAYMENT PROVISIONS

All payments to be paid by the Company under this Agreement shall be credited into such bank account designated by the Board or otherwise received by the Board not later than 11.00 a.m. (Singapore time) on the applicable payment date. The Board may from time to time designate such other bank account or mode of payment by notice in writing to the Company not less than ten (10) Business Days prior to the date of any such payment hereunder.

10. PREPAYMENT AND CANCELLATION

10.1 Subject to Clause 8 above, the Company may elect to prepay any part or whole of the Loan without penalty or premium, at any time before the Final Repayment Date by giving the Board at least twenty (20) days' prior written notice of its intention to make any such prepayment(s) for any amount of the outstanding Term Loan Facility that had been drawn down by the Company.

10.2 If any Vaccine Sale occurs (or is scheduled to occur):

(a) (in the case of the first Vaccine Sale) the Company shall, promptly and in any event within ten (10) days of the delivery of the relevant Vaccines, notify the Board of such Vaccine Sale, the date of receipt and the amount of the Net Sales Proceeds expected to be received for such Vaccine Sale;

(b) (in any other case) the Company shall, within thirty (30) days of the end of each calendar quarter, provide quarterly reports containing the following information:

(i) the aggregate Vaccine Sales during the calendar quarter immediately preceding the report;

(ii) the aggregate amount of Net Sales Proceeds as calculated by the Company in accordance with GAAP for the calendar quarter immediately preceding the report; and

(iii) the aggregate amount of Net Sales Proceeds to be paid by the Company to the Board pursuant to Clause 10.2(c) below; and

(c) the Company shall ensure that [***]% of the Net Sales Proceeds accrued during each calendar quarter (commencing from and including the calendar quarter in which the Company first receives any Net Sales Proceeds) shall be promptly applied towards mandatory prepayment of the Loan and payment of interest thereon within [***] days of the end of the applicable calendar quarter.

10.3 For the avoidance of doubt,

(a) [***]; and

(b) [***].

10.4 [***].

10.5 On or before the first Reconciliation Date, the Company shall notify the Board of:

(a) its total expenditure from the proceeds of the Loan as at that Reconciliation Date; and

(b) the amount of the proceeds of the Loan which remains unused as at that Reconciliation Date (the "**Unused Loan Proceeds**").

10.6 Subject to Clause 10.7 below, the Company shall promptly and in any event within thirty (30) days of such Reconciliation Date apply the Unused Loan Proceeds towards mandatory prepayment of the Loan.

10.7 If the Company and the Board agrees to a subsequent Reconciliation Date, the Company shall prepay the Loan to the extent of the Unused Loan Proceeds determined as at the subsequent Reconciliation Date.

10.8 For the avoidance of doubt, in the event that no subsequent Reconciliation Date is agreed by the date falling immediately before the first Reconciliation Date, the Company shall promptly and in any event within thirty (30) days of the first Reconciliation Date apply all the Unused Loan Proceeds towards mandatory prepayment of the Loan.

10.9 Any prepayment under Clause 10.6 shall be applied in the following order:

(a) [***];

(b) [***]; and

(c) [***].

10.10 Any other prepayment under this Clause shall be applied in the following order:

(a) firstly, in or towards payment of any interest accrued and outstanding;

(b) secondly, in or towards payment of all other amounts due and payable under the Finance Documents; and

(c) thirdly, in or towards payment of any outstanding principal.

11. LOAN FORGIVENESS

11.1 A "**Clause 11 Triggering Event**" shall occur if both the following conditions are satisfied:

(a) the Company has not obtained any Specified Regulatory Approval by the Final Repayment Date; and

(b) the cumulative Net Sales Proceeds as of the Final Repayment Date are equal to or less than US$[***] (as may be converted from all other relevant currencies at the exchange rate applicable as of the date of receipts thereof).

12. AUDIT RIGHTS

12.1 The Company shall keep books and records accurately showing all the details of all Vaccine Sales (including the Net Sales Proceeds and the amounts due to be paid to the Board pursuant to Clause 10.2 above) by the Company and its Affiliates for so long as any amount remains outstanding under this Agreement.

12.2 Such books and records shall be preserved for so long as any amount remains outstanding under this Agreement, during which time the Board shall have the right, after giving thirty (30) days prior notice to the Company, to cause an independent, certified public accountant or auditor reasonably acceptable to the Company to inspect such records during normal business hours for the purposes of verifying the accuracy of any payments delivered under this Agreement. The Company shall be deemed to be in compliance with this Clause 12.2 if (a) the accuracy of any payments delivered under this Agreement is audited pursuant to the annual independent audit of the financial statements of the Company's parent company, Arcturus Therapeutics Holdings Inc., by Ernst and Young LLP (or such other independent, certified public accountant or auditor reasonably acceptable to Board), (b) such audited financial statements are accompanied by a signed report of the independent, certified public accountant or auditor and (c) such audited financial statements include a note which specifically identifies the total revenue generated from the Vaccine Sales in the relevant year, the aggregate Net Sales Proceeds in the relevant year and the aggregate amount of Net Sales Proceeds to be paid by the Company to the Board pursuant to Clause 10.2(c) in the relevant year.

12.3 Such accountant or other auditor, as applicable, shall not disclose to the Board any information other than information relating to the accuracy of the amounts paid or due to be paid to the Board pursuant to Clause 10.2 above.

12.4 The Company shall also confirm to the Board that the Company remains solvent as at the date of the certificate delivered pursuant to Clause 14(i) and that this conclusion is consistent with

the audit report of an independent certified public accountant of Arcturus Therapeutics Holdings Inc. set out in the financial statements referred to in Clause 12.2 above.

12.5 The Company shall bear the costs of performing such inspection once every calendar year and the Board shall bear the costs of performing any subsequent inspections thereafter in that calendar year, provided that:

(a) if the inspection reveals any underpayment error in excess of three percent (3%) of the Net Sales Proceeds the Board is supposed to receive pursuant to Clause 10.2(c), the Company shall bear the costs of that inspection and pay such additional amounts to the Board equal to the amount underpaid subject to Clause 10.3; and

(b) the Company shall bear the costs of one further inspection:

(i) no earlier than thirty (30) days before the Final Repayment Date; and

(ii) within thirty (30) days of the commencement of discussions pursuant to Clause 11 provided that there has been at least one Vaccine Sale during the relevant fiscal year,

in each case, notwithstanding an inspection may have already been done earlier that calendar year.

13. WARRANTIES AND REPRESENTATIONS

13.1 The Company hereby warrants and represents to the Board on the date of this Agreement as follows:

(a) that it is duly incorporated, validly existing and in good standing under the laws of the State of Delaware and is duly qualified to do business and is in good standing as a foreign entity in each jurisdiction where the nature of its business requires such qualification;

(b) that it has the corporate power and authority to carry on its business as now being conducted and, as of the date of this Agreement and to its knowledge having made due and careful enquiry, the Company has the requisite skill, knowledge, staffing, financial resources, capacity and ability to carry out its obligations hereunder;

(c) that it has the corporate power to execute and perform each Transaction Document and to borrow hereunder and the individual signing this Agreement has the necessary authority to legally bind the Company to the terms set forth herein;

(d) that the obligations expressed to be assumed by it in each Transaction Document are legal, valid, binding and enforceable obligations;

(e) that the execution, delivery and performance of each Transaction Document, the borrowings hereunder and the creation of the Security as contemplated by the Security Documents have been duly authorised by all requisite corporate action and will not violate or conflict with, or result in the imposition of any Security under (other than as contemplated by the Security Documents):

(i) any law or regulation applicable to it;

(ii) its certificate of incorporation and bylaws of the Company; or

(iii) any provision of any agreement (including the Western Alliance Agreement) or court order, consent decree or other arrangement, whether written or oral, by which it is bound;

(f) that all Authorisations required or desirable:

(i) to enable it lawfully to enter into, exercise its rights and comply with its obligations in each Transaction Document;

(ii) to make each Transaction Document admissible in evidence in any relevant jurisdiction; and

(iii) to enable it to create the Security to be created by it pursuant to any Security Document to which it is a party and to ensure that such Security has the priority and ranking it is expressed to have,

have been obtained or effected and are in full force and effect (including in respect of the Western Alliance Agreement);

(g) that no Default is continuing or might reasonably be expected to result from the making of any Drawing;

(h) to the Company's knowledge, having made due and careful enquiries, that any factual information provided by it in relation to each Transaction Document was true and accurate in all material respects as at the date it was provided or as at the date (if any) at which it is stated, and nothing has occurred or been omitted from such factual information as at the date it was provided and no information has been given or withheld as at the date it was provided that results in such information being untrue or misleading in any material respect;

(i) that its payment obligations under each Transaction Document rank at least *pari passu* with the claims of all its other unsecured and unsubordinated creditors, except for obligations mandatorily preferred by law applying to companies generally;

(j) that the Security created or expressed to be created in favour of the Board by or pursuant to each Security Document has and shall have the ranking in priority which it is expressed to have in that Security Document and is not and shall not be subject to any prior ranking or *pari passu* ranking Security;

(k) that its latest balance sheet and financial statements made available to the Board are in the forms filed with the US Securities and Exchange Commission and accurately represent the financial condition of the Company on the date thereof and the results of its operation for the period then ended and each such balance sheet shows all known present and future liabilities, direct or contingent, of the Company which are required by the generally accepted accounting principles to be set forth on the balance sheet as of the date thereof and each financial statement referred to herein was prepared in accordance with generally accepted accounting principles;

(l) that as of the date of this Agreement, there has been no change in the business activities, operations or financial condition of the Company which may affects its ability to repay the Loan or perform any of its material obligations under any Transaction Document in relation to the Manufacture of the Vaccine and the delivery of the Vaccine

to Singapore since the date of the latest financial statements referred to in sub-paragraph (k) above;

(m) there are no actions, suits or proceedings pending or, to the Company's knowledge, threatened against the Company or any of its Affiliates at law or in equity (whether or not purportedly on behalf of the Company, its parent or any of its subsidiaries) in relation to the Project and/or Charged Property before any court or competent body adjudicating such matters (other than a proceeding which is frivolous or vexatious and is discharged, stayed or dismissed within ninety (90) days of commencement) which, if adversely determined, would be expected to materially and adversely affect the ability of the Company to repay the Loan when due or perform any of its material obligations under any Transaction Document in relation to the Manufacture of the Vaccine and the delivery of the Vaccine to Singapore; and

(n) that no steps have been taken or are being taken to appoint a receiver and/or manager or judicial manager (or equivalent officer) or liquidator or any other person over it or any of its assets or in any winding up action, save for any winding-up petition which is frivolous or vexatious and is discharged, stayed or dismissed within ninety (90) days of commencement.

13.2 Each of the warranties and representations contained in this Clause 13 herein are deemed to be made by the Company by reference to the facts and circumstances then existing on the date of the Written Notice, the Drawdown Date and on the first day of each Interest Period.

14. AFFIRMATIVE UNDERTAKINGS

The Company hereby undertakes and agrees with the Board as follows:

(a) that the Term Loan Facility granted by the Board under the provisions of this Agreement and every part thereof shall be used solely for the purpose and in the manner hereinbefore stipulated and not for any other purpose or manner save with the prior written consent of the Board;

(b) that it shall promptly obtain, comply with and do all that is necessary to maintain in full force and effect, and (if requested by the Board) supply certified copies to the Board of, any Authorisation required under any relevant law or regulation to enable it to perform its obligations under this Agreement and to ensure the legality, validity, enforceability or admissibility in evidence in any relevant jurisdiction of each Transaction Document;

(c) that it shall, cause its parent company, Arcturus Therapeutics Holdings Inc., to timely make all quarterly and annual filings required under applicable US securities laws and to provide the Board, within ten (10) days from the date of filing, with copies of all such quarterly and annual filings;

(d) that it shall, within forty-five (45) days from the end of each financial quarter, deliver to the Board a statement of expenditure on the Eligible Manufacturing Activities (in the form set out in Schedule 2) and, if the Board requests, submit copies (certified true by a director of the Company) of the invoices, receipts and such other documents in support of such statement of expenditure within ten (10) days of such request;

(e) that it shall keep all its Equipment in good and substantial repair and proper working condition provided that if such Equipment is no longer deemed necessary for its

operations, the Company shall offer to transfer such Equipment to the Board at no cost to the Board, and shall be free to dispose of such Equipment if such offer is rejected provided that the proceeds of such disposal are promptly applied towards mandatory prepayment pursuant to Clause 10.4 above;

(f) that it shall comply with all obligations related to the Charged Property;

(g) that it shall give to the Board such written authorities or other directions and provide such facilities and access as the Board may reasonably require for any inspection conducted in connection with any of the Eligible Manufacturing Activities or in order to require delivery or (as the case may be) take possession of any Charged Property pursuant to the terms of the Security Agreement, provided that where the consent of any third party contractor is required for such inspection the Company shall use its reasonable endeavours to obtain such consent;

(h) that it shall notify the Board of any Default (and the steps, if any, being taken to remedy it) promptly upon becoming aware of its occurrence, and promptly upon the request of the Board, the Company shall supply to the Board a certificate signed by two of the Company Authorized Signatories on its behalf certifying that no Default is continuing (or if a Default is continuing, specifying the Default and the steps, if any, being taken to remedy it);

(i) that it shall deliver to the Board on the Drawdown Date and every anniversary thereafter, a certificate (signed by a Company Authorized Signatory) certifying that:

(i) the Company is committed to use Commercially Reasonable Efforts to complete phase 3 trials of the Vaccine and the manufacture thereof;

(ii) in the opinion of such Company Authorized Signatory, the Company has sufficient financial resources to use Commercially Reasonable Efforts to complete phase 3 trials of the Vaccine and the manufacture thereof (or if, in the opinion of such Company Authorized Signatory, the Company does not have sufficient financial resources to use Commercially Reasonable Efforts to complete phase 3 trials of the Vaccine and the manufacture thereof, the Company has taken steps to obtain sufficient financial resources); and

(iii) (if applicable) Commercially Reasonable Efforts are being taken to effect the steps set forth in sub-paragraph (ii) above;

(j) that it shall, as soon as practicable after the Drawdown Date, deliver to the Board:

(i) financing statements suitable in form for naming the Company as a debtor and the Board as the secured party, or other similar instruments or documents to be filed under the Uniform Commercial Code of all jurisdictions as may be necessary or desirable to perfect the Security of the Board in the Charged Property pursuant to the Security Documents; and

(ii) all other documentation, and/or evidence of all filings, registrations, annotations and all steps, required to perfect, protect and/or preserve the Board's rights under the Security Documents, including, without limitation, the payment of all fees, taxes and stamp duties in relation to the Security Documents.

15. NEGATIVE UNDERTAKINGS

The Company hereby undertakes and agrees with the Board that it shall not without the written consent of the Board:

(a) create or permit to arise or subsist, any mortgage, charge (whether fixed or floating), pledge, lien or other encumbrances whatsoever on any of the Charged Property, both present and future whatsoever and wheresoever situate, other than the Security created by any Security Document;

(b) enter into a single transaction or a series of transactions (whether related or not and whether voluntary or involuntary) to sell, lease, transfer or otherwise dispose of (including through a dividend or investment in a subsidiary) any of the Charged Property other than any sale, lease, transfer or disposal in the ordinary course of its business in circumstances where Clause 14(e) is not breached;

(c) allow its parent company, Arcturus Therapeutics Holdings Inc., to be delinquent with respect to its quarterly and annual filings required under applicable US securities laws; or

(d) commence any Insolvency Proceeding.

16. EVENTS OF DEFAULT

16.1 Each of the events or circumstances set out in this Clause 16.1 is an Event of Default:

(a) if the Company shall fail, neglect, delay, omit and/or refuse to make the requisite payments for any sums of monies, whether fees, charges, interest and/or principal or otherwise (where applicable) which becomes due under this Agreement, unless payment is made within five (5) Business Days of the Board giving written notice to the Company;

(b) if the Company does not comply with any of its obligations under (i) Clause 10.4 to Clause 10.8, (ii) Clause 12 and/or (iii) Clause 14(c) in any material respect, unless in each case, the failure to comply is capable of remedy and is remedied within fourteen (14) days of the Board giving written notice to the Company;

(c) if the Company does not comply with any provision of the Transaction Documents (other than that referred to in Clause 16.1(a) and 16.1(b) above) in any material respect, or does not comply with any provision of the [***] in any material respect unless the failure to comply is capable of remedy and is remedied within sixty (60) days of the Board giving written notice to the Company;

(d) if any representation or warranty made in or in pursuance of the Transaction Documents shall be inaccurate, false, misleading or incorrect in any material respect, unless the misrepresentation is capable of remedy and is remedied within sixty (60) days of the Board giving written notice to the Company or the Company becoming aware of the misrepresentation;

(e) if a distress or execution is levied or enforced upon or sued out against any part of the Charged Property and is not discharged within sixty (60) days of being levied;

(f) if the Company becomes insolvent or is unable to pay its debts as they mature or admits in writing its inability to pay its debts as they mature, or makes a general assignment for the benefit of its creditors;

(g) if the Company ceases or threatens to cease to carry on its business;

(h) if:

(i) the Company ceases to be a subsidiary of its current parent company, Arcturus Therapeutics Holdings Inc. (other than in connection with a Permitted Change of Control);

(ii) Arcturus Therapeutics Holdings Inc. is more than thirty (30) days delinquent with respect to its quarterly and annual filings required under applicable US securities laws;

(iii) the common stock of Arcturus Therapeutics Holdings Inc. (or of its successor pursuant to a Permitted Change of Control) (A) ceases to be publicly listed on a U.S. nationally recognised stock exchange or for any reason, or (B) are suspended from trading for a period of fourteen (14) days or more, unless within fourteen (14) days after such delisting event, the Company has given a binding undertaking to the Board to continue to deliver to the Board, by the times that such information would be required to be publicly available, all the information that would be required to be made publicly available if such event as set out in this sub-paragraph (iii) had not occurred; or

(iv) the Company fails to comply with any of its obligations under an undertaking referred to in sub-paragraph (iii) above in any material respect, unless the failure to comply is capable of remedy and is remedied within fourteen (14) days of the Board giving written notice to the Company;

(i) if:

(i) the Board's interests under any Security Document or any Security provided under this Agreement is not in full force and effect unless such failure is capable of remedy and is remedied within sixty (60) days of the Board giving written notice to the Company;

(ii) the Board's interests under any Security Document or any Security provided under this Agreement does not create in favour of the Board the Security which it is expressed to create with the ranking and priority it is expressed to have; or

(iii) the Board's interests under the [***] is not in full force and effect unless such failure is capable of remedy and is remedied within sixty (60) days of the Board giving written notice to the Company;

(j) if any Insolvency Proceeding is commenced by the Company or any parent entity of the Company, or if any Insolvency Proceeding is commenced against the Company or any parent entity of the Company and is not dismissed or stayed within sixty (60) days;

(k) if it becomes unlawful for the Company to perform any of its material obligations under any Transaction Document in relation to the Manufacture of the Vaccine and the delivery of the Vaccine to Singapore as and when such obligations are due to be performed, and for the avoidance of doubt, it is not an Event of Default if the Company

fails to achieve any regulatory approval relating to the Vaccine so long as the Company uses reasonable and diligent efforts to obtain such approval;

(l) any Transaction Document is not in full force and effect or any obligation of the Company under any Transaction Document is not or ceases to be legal, valid, binding or enforceable;

(m) if the Company repudiates any Transaction Document or evidences in writing an intention to repudiate any Transaction Document;

(n) if the Company fails to implement the Project as stated in Clause 4.3;

(o) if the Company uses the Loan proceeds for any purpose other than financing the Eligible Manufacturing Activities; or

(p) if, after all approvals and authorizations that are necessary for the importation, marketing and use of the Vaccine for use (whether permanent or under any emergency authorisation) in Singapore have been obtained, the Company does not provide [***] grams of the Vaccine to the Board at no cost and ahead of any other country by the later of (i) [***] and (ii) thirty (30) days after all approvals and authorizations that are necessary for the importation, marketing and use of the Vaccine for use (whether permanent or under any emergency authorisation) in Singapore are obtained by the Company,

then and in any of such event, the Board may, by notice in writing to the Company (and, in the case of a Default under clause (i) above, each of the actions under clauses (i) and (iii) below shall automatically apply):

(i) declare the Loan (including all interest capitalised hereunder) and any other sums agreed to be paid under this Agreement be immediately become due and payable without any demand or notice of any kind by the Board to the Company, whereupon they shall become immediately due and payable;

(ii) exercise all or any rights, powers or remedies under this Agreement in any order it deems fit, including without limitation its right to call on any Security Document or Security given to the Board in any order or any one or more of them; and/or

(iii) cancel the Term Loan Facility whereupon it shall immediately be cancelled.

16.2 After the declaration by the Board under Clause 16.1 (or upon the automatic application of such actions in the case of a Default under Clause 16.1(j)), all monies received or recovered by the Board (whether such monies shall have been received or recovered as a result of or arising from its exercise of all or any rights, powers or remedies under this Agreement, upon calling of any Security Document or any Security provided under this Agreement or any one or more of them or by way of a set-off or otherwise) shall be held by it and shall be applied as follows:

(a) firstly, in or towards payment of all costs charges and expenses (including without limitation legal costs on a solicitor and client basis), if any, incurred in enforcing this Agreement, any Security Document, any Security provided under this Agreement or any one or more of them;

(b) secondly, in or towards payment to the Board of all monies and liabilities due, owing or outstanding under any Transaction Document and where such monies and liabilities

are of a contingent nature, in or towards making full and adequate provisions for payment of such monies and liabilities as and when they become due and payable; and

(c) thirdly, any surplus thereafter shall be paid to the Company.

17. NOTICES

17.1 Except as otherwise expressly provided herein, any notice, request, demand or other communication to be given or served under or in connection with the Finance Documents by one of the parties hereto to or on the other or others may be delivered at or sent by prepaid registered post or by email to the address or addresses specified in the respective signature blocks below of the parties and shall be deemed to be duly received:

(a) if it is delivered, at the time of delivery;

(b) if it is sent by prepaid registered post, three (3) Days after posting thereof; or

(c) if it is sent by way of email, as specified in Clauses 17.2 and 17.3 below.

17.2 Any communication or document under or in connection with the Finance Documents may be made by or attached to an email and will be effective or delivered only:

(a) on the first to occur of the following:

(i) when it is dispatched by the sender to at least one of the relevant email addresses specified by the recipient, unless for each of the addresses, the sender receives an automatic notification that the e-mail has not been received (other than an out of office greeting for the named addressee) and it receives the notification before two (2) hours after the last to occur (for all addresses) of:

(A) dispatch if in business hours in the city of the address; or

(B) if not, the next opening of business in such city;

(ii) the sender receiving a message from the intended recipient's information system confirming delivery of the email; and

(iii) the email being available to be read at one of the email addresses specified by the recipient; and

(b) if the email is in an appropriate and commonly used format, and any attached file is a pdf, jpeg, tiff or other appropriate and commonly used format.

17.3 In relation to an email with attached files:

(a) if the recipient notifies the sender that it did not receive the email with attached files, then the sender shall promptly send to the recipient the attached files in a manner that can be received by the recipient;

(b) if the recipient of the email notifies the sender that it is unable to read the format of an attached file or that an attached file is corrupted, specifying appropriate and commonly

used formats that it is able to read, the sender must promptly send to the recipient the file in one of those formats or send the attachment in some other manner; and

(c) if within two hours of:

(i) dispatch of the email if in business hours in the city of the recipient; or

(ii) if not, the next opening of business in the city of the recipient,

the recipient notifies the sender as provided in subparagraph (a) or (b), then the relevant attached files will be taken not to have been received until the sender complies with that subparagraph.

17.4 For the purpose of this Clause 17 each of the parties hereto shall from time to time notify the other party in writing of the applicable address or email address where such notice, request, demand or other communications as aforesaid can be given or served and such notification shall be effective only when it is actually received. In the absence of such notification, the notice, request, demand or other communication aforesaid may be given or served at the addresses or email address of the respective parties as stated above.

17.5 Any communication or document to be made or delivered to the Board will be effective only when actually received by the Board and then only if it is expressly marked for the attention of the department or officer (or any substitute department or officer as the Board shall specify for this purpose).

17.6 Any notice and all other documents given under or in connection with the Finance Documents must be in English, or if not in English, and if so required by the Board, accompanied by a certified English translation and, in this case, the English translation will prevail unless the document is a constitutional, statutory or other official document.

18. WAIVER NOT TO PREJUDICE RIGHT OF BOARD

18.1 All the rights of the Board under the Finance Documents or otherwise are cumulative and the exercise of any such right shall not be considered a waiver of or an estoppel against the exercise of any other right by the Board.

18.2 The Board may from time to time and at any time waive either unconditionally or on such terms and conditions as it may deem fit any breach by the Company of any of the undertakings stipulations terms and conditions herein contained and any modification thereof but without prejudice to its powers rights and remedies for enforcement thereof, provided always that:

(a) no neglect or forbearance of the Board to require and enforce payment of any monies hereunder or the performance and observance of any undertaking stipulation term or condition herein contained, nor any time which may be given to the Company shall in any way prejudice or affect any of the rights, powers or remedies of the Board at any time afterwards to act strictly in accordance with the provisions hereof;

(b) no such waiver of any such breach as aforesaid shall prejudice the rights of the Board in respect of any other or subsequent breach of any of the undertakings stipulations terms or conditions aforesaid.

19. INDULGENCE OF THE BOARD

The liability of the Company hereunder shall not be impaired or discharged by reason of any time or other indulgence being granted by or with the consent of the Board to any person who or which may be in any way liable to pay any of the monies secured hereby by any security not given pursuant to this Agreement in favour of the Board or by reason of any arrangement being entered into or composition accepted by the Board which has the effect of modifying the operation of law or otherwise its rights and remedies under the provisions of this Agreement.

20. SEVERABILITY

In case any provision in the Finance Documents shall be, or at any time shall become invalid, illegal or unenforceable in any respect under any law, such invalidity, illegality or unenforceability shall not in any way affect or impair the other provisions of the Finance Documents but the Finance Documents shall be construed as if such invalid or illegal or unenforceable provision contained herein or therein did not form a part of the Finance Documents.

21. GOVERNING LAW

This Agreement shall be governed by and construed in all respects in accordance with the laws of the Republic of Singapore.

22. ENFORCEMENT

22.1 Any dispute, controversy, difference or claim arising out of or in connection with this Agreement (including, without limitation: (1) any contractual, pre-contractual or non-contractual rights, obligations or liabilities; and (2) any issue as to the existence, validity or termination of this Agreement) shall be referred to and finally resolved by arbitration as follows:

(a) each arbitration between the parties shall be seated in Singapore, and shall be conducted pursuant to the Arbitration Rules of the Singapore International Arbitration Centre (the "**Rules**") in force when the arbitration commences, which Rules are deemed to be incorporated by reference in this Clause;

(b) the tribunal shall consist of three arbitrators. (The claimant shall nominate one arbitrator. The respondent shall nominate one arbitrator. The two arbitrators thus appointed shall nominate the third arbitrator who shall be the residing arbitrator. If within fourteen (14) days of a request from the other party to do so a party fails to nominate an arbitrator or if the two arbitrators fail to nominate the third arbitrator within fourteen (14) days after the appointment of the second arbitrator, the appointment shall be made, upon request of a party, by the Chairman of the Singapore International Arbitration Centre in accordance with the Rules);

(c) the arbitration shall be conducted in the English language;

(d) the law of this arbitration agreement shall be Singapore law;

(e) any award of the tribunal shall be made in writing and shall be final and binding on the parties;

(f) any attempt to set aside the award shall be made only in Singapore in accordance with Singapore law;

(g) the claimant and the respondent to the arbitration shall each bear its own costs and legal fees in any arbitration and the reasonable fees and costs of the arbitrators shall be advanced equally by the claimant and respondent provided that the arbitrators shall allocate payment of all fees incurred by the claimant and the respondent in the final award based upon the allocation of fault for the applicable dispute and further provided that the arbitrators shall not award punitive damages; and

(h) the parties waive any right to apply to any court of law and/or other judicial authority to determine any preliminary point of law and/or review any question of law and/or the merits insofar as such waiver may validly be made. (The parties shall not be deemed, however, to have waived any other right to challenge any award. Nothing in this Clause 22.1(h) shall be construed as preventing any party from seeking conservatory or interim relief from any court of competent jurisdiction.)

22.2 The Company irrevocably and unconditionally waives, to the fullest extent permitted by applicable law, with respect to itself and its revenues and assets (irrespective of their use or intended use), all immunity on the grounds of sovereignty or other similar grounds from:

(a) suit or any other proceedings or legal process;

(b) jurisdiction of any court;

(c) relief by way of injunction or order for specific performance or recovery of property;

(d) attachment of its assets (whether before or after judgment); and

(e) execution or enforcement of any judgment to which it or its revenues or assets might otherwise be entitled in any proceedings in the courts of any jurisdiction,

and irrevocably agrees, to the extent permitted by applicable law, that it will not claim any such immunity in any proceedings.

23. NO SET-OFF BY THE COMPANY

All payments to be made by the Company under the Finance Documents shall be calculated and be made without (and free and clear of any deduction for) set-off or counterclaim.

24. MISCELLANEOUS

24.1 If the Company requests an amendment, waiver or consent, the Company shall, within ten (10) Business Days of demand, reimburse the Board for the amount of all costs and expenses

(including pre-agreed legal fees on a solicitor-and-client basis) incurred by the Board in responding to, evaluating, negotiating or complying with that request or requirement.

24.2 The Company shall promptly on demand pay all legal fees on a solicitor and client basis, and other costs and disbursements incurred by the Board in connection with the enforcement of, or preservation of any rights under, any Transaction Document, subject to Clause 22.1.

24.3 A certificate signed by a duly authorised officer for the time being of the Board as to the amount of interest, principal, monies and/or liabilities for the time being due to the Board or incurred by the Board under any Transaction Document and any Security provided pursuant to this Agreement or other Finance Documents shall, subject to the agreement of the Company, be conclusive evidence to the matters to which it relates.

24.4 All payments to be made by the Company to the Board shall be made free and clear of and without deduction for or on account of Tax unless the Company is required to make such a payment subject to the deduction or withholding of Tax, in which case the sum payable by the Company (in respect of which such deduction or withholding is required to be made) shall be increased to the extent necessary to ensure that that the Board receives a sum net of any deduction or withholding equal to the sum which it would have received had no such deduction or withholding been made or required to be made.

24.5 Without prejudice to Clause 24.4, if the Board is required to make any payment of or on account of Tax on or in relation to any sum received or receivable under the Transaction Documents (including any sum deemed for purposes of Tax to be received or receivable by the Board whether or not actually received or receivable) paid by the Company to the Board, or if any liability in respect of any such payment is asserted, imposed, levied or assessed against the Board, the Company shall, upon demand of the Board, promptly indemnify the Board against such loss or liability as a result against such payment or liability, together with any interest, penalties, costs and expenses payable or incurred in connection therewith, provided that this Clause 24.5 shall not apply to any Tax imposed on and calculated by reference to the net income actually received or receivable by the Board in Singapore.

24.6 If the Company makes an increased payment under Clause 24.4 or Clause 24.5 above (a "**Tax Payment**") and the Board determines that:

(a) a credit against, relief or remission for, or repayment of any Tax (a "**Tax Credit**") is attributable either to an increased payment of which that Tax Payment forms part, or to that Tax Payment; and

(b) the Board has obtained, utilised and retained that Tax Credit,

the Board shall pay an amount to the Company which the Board determines will leave it (after that payment) in the same after-Tax position as it would have been in had the Tax Payment not been required to be made by the Company.

24.7 The Company may not assign any of its rights or transfer any of its rights or obligations under the Finance Documents.

24.8 The Finance Documents shall be binding upon the successor of the Company and shall inure to the benefit of the Board and its successors and assigns. In the event that the Capital Assistance Scheme is to be transferred or is to be handed over to be administered by another agency, statutory body and/or legal entity under the control of the Government of the Republic of Singapore, the Company hereby agrees and undertakes to execute any documents necessary to effect any assignments or novations (where applicable and if required by the

Board) in order to facilitate the transferring and handing over to such other above-mentioned agency, statutory body and/or legal entity.

24.9 All non-public, confidential or proprietary information of the Company and its Affiliates provided by the Company to the Board pursuant to this Agreement shall be kept confidential by the Board and shall be disclosed to a director, officer or employee of the Board only to the extent that the disclosure is necessary for the said director's, officer's or employee's as the case may be, performance of his duties. Said information shall not be disclosed to any third parties, including but not limited to the general public and the press, except with the prior written approval of the Company or where required by law, rule, regulation, order or requirement of court, administrative agency or governmental or regulatory body. Notwithstanding the generality of the foregoing, the Board may release said information, on a strictly confidential and need to know basis, to auditors, tax consultants and legal advisors as may be necessary for the purposes of obtaining professional advice PROVIDED the Board ensures that such third parties are first informed of, and acknowledge in writing, the confidential nature of the disclosed information.

24.10 The terms and conditions of the Finance Documents shall be kept confidential by the Company and shall be disclosed to a director, officer or employee of the Company only to the extent that the disclosure is necessary for the said director's, officer's or employee's as the case may be, performance of his duties. Said information shall not be disclosed to any third parties, including but not limited to the general public and the press, except with the prior written approval of the Board, provided that the Board shall not unreasonably withhold approval and the Company shall ensure that any such party provides or enters into a non-disclosure agreement with the Company prior to any such disclosure. Notwithstanding the generality of the foregoing, the Company may release said information, on a strictly confidential and need to know basis, to auditors, tax consultants and legal advisors as may be necessary for the purposes of obtaining professional advice PROVIDED the Company ensures that such third parties are first informed of, and acknowledge in writing, the confidential nature of the disclosed information. The Company may also release the said information to the Inland Revenue Authority of Singapore (IRAS) where the release is made pursuant to a statutory obligation owed to IRAS. For the avoidance of doubt, the existence of the Term Loan Facility shall be regarded as a term and condition of the Finance Documents for the purpose of this clause. Furthermore, as a subsidiary of a publicly traded company in the US, the Company may disclose this Agreement and the existence, terms and conditions of this Agreement to the extent necessary, as reasonably determined by the Company, for the Company’s parent company to be in compliance with regulatory requirements with the US Securities and Exchange Commission.

IN WITNESS WHEREOF this Agreement has been signed by or on behalf of the parties hereto the day and year first before written.

[*Remainder of this page intentionally left blank*]

IN WITNESS WHEREOF this Agreement has been entered into on the date stated at the beginning.

The Company

ARCTURUS THERAPEUTICS, INC

Address: 10628 Science Center Drive, Suite 250
San Diego, CA 92121

Attention: Joseph E. Payne, President & CEO

Email: [***]

with a copy to:

Address: 10628 Science Center Drive, Suite 250
San Diego, CA 92121

Attention: Lance Kurata, Chief Legal Officer

Email: [***]

By: /s/ Joseph Payne

Name: Joseph Payne

Title: President, Chief Executive Officer

The Board

ECONOMIC DEVELOPMENT BOARD

Address: 250 North Bridge Road
#28-00 Raffles City Tower
Singapore 179101

Attention: Wan Yee GOH

Email: [***]

By: /s Authorized Signatory

Name: Authorized Signatory

Title: Authorized Signatory

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

I, Joseph E. Payne, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Arcturus Therapeutics Holdings Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 9, 2020

By: /s/ Joseph E. Payne

Joseph E. Payne
President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

I, Andrew Sassine, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Arcturus Therapeutics Holdings Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 9, 2020

By: /s/ Andrew Sassine

Andrew Sassine
Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

The undersigned, the President and Chief Executive Officer of Arcturus Therapeutics Holdings Inc. (the "Company"), hereby certifies on the date hereof, pursuant to 18 U.S.C. 1350(a), as adopted pursuant to Section 906 of The Sarbanes-Oxley Act of 2002, that the Quarterly Report on Form 10-Q for the period ended September 30, 2020 (the "Form 10-Q"), filed concurrently herewith by the Company, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 9, 2020

By: /s/ Joseph E. Payne

Joseph E. Payne
President and Chief Executive Officer

Exhibit 32.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

The undersigned, the Chief Financial Officer of Arcturus Therapeutics Holdings Inc. (the "Company"), hereby certifies on the date hereof, pursuant to 18 U.S.C. 1350(a), as adopted pursuant to Section 906 of The Sarbanes-Oxley Act of 2002, that the Quarterly Report on Form 10-Q for the period ended September 30, 2020 (the "Form 10-Q"), filed concurrently herewith by the Company, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 9, 2020

By: /s/ Andrew Sassine

Andrew Sassine
Chief Financial Officer