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DELTA REPORT

10-Q

ARCT - ARCTURUS THERAPEUTICS HOL

10-Q - MARCH 31, 2024 COMPARED TO 10-Q - SEPTEMBER 30, 2023

The following comparison report has been automatically generated

TOTAL DELTAS	1659
CHANGES	106
DELETIONS	775
ADDITIONS	778

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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, March 31, 2023 2024

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	**32-0595345**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

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

(858) 900-2660

(Registrant's telephone number, including area code)

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 10, 2023 May 3, 2024, the registrant had 26,723,332 26,931,826 shares of voting common stock outstanding.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES

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Special Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q or this quarterly report, (this "Quarterly Report"), including the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations," and the documents incorporated by reference herein may contain express or implied "forward-looking statements" within the meaning of the federal securities laws, Section 27A of the Securities Act of 1933, as amended and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and 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 1A, "Risk Factors" in this quarterly report. 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. Forward-looking Such statements in this quarterly report may include, but are not limited to, statements about: concerning the following:

- our compliance, and ability to remain in compliance, with the stringent requirements of our current and potential government contracts, including our arrangements with the Biomedical Advanced Research and Development Authority, a division of the Office of the Assistant Secretary for Preparedness and Response within the U.S. Department of Health and Human Services and the Department of Defense;
- our compliance, and ability to remain in compliance, with the requirements of our collaboration agreements, inclu our collaboration with Seqirus Inc. ("CSL Seqirus");
- the anticipated benefits and success of our collaboration agreement with CSL Seqirus related to the licensure of our STARR® mRNA technology and LUNAR® lipid-mediated delivery, including our timely receipt of upfront and potential royalty and other payments thereunder;
- the status continued development activities of the LUNAR-COV19 and success of studies conducted by Meiji Holdings Co., Ltd. and their affiliates, including those related to ARCT-154; LUNAR-FLU programs under our

collaboration with CSL Seqirus;

- the status, success and benefits of our arrangements with private and governmental entities, some of which are subject to termination for convenience by our counterparties;
- our compliance, and ability to remain in compliance, with the stringent requirements of our current and potential government contracts, including our arrangements with the Biomedical Advanced Research and Development Authority, a division of the Office of the Assistant Secretary for Preparedness and Response within the U.S. Department of Health and Human Services and the Department of Defense;
- the initiation, design, cost, timing, progress, enrollment and results of, and our expected ability to undertake certa activities and accomplish certain goals with respect to, our research and development activities, preclinical studie and clinical trials, including those related to ARCT-154, our therapeutics pipeline candidates ARCT-810 and ARC 032;
- our ability to expand our platform technologies and discovery efforts;
- the potential safety, immunogenicity, efficacy or regulatory approval of any of our COVID-19 vaccine candidates a booster or primary vaccination series;
- the potential effects and benefits of our technologies and product candidates on their own and in comparison to technologies, drugs or courses of treatment currently available or that may be developed by competitors;
- the likelihood that preclinical or clinical data including with respect to ARCT-154, will be predictive of future clinica results or efficacy or safety of a product candidate;
- the anticipated timing of enrollment, duration, milestones and announcements of results of clinical trials, and the submission of applications to conduct clinical trials;
- the likelihood that clinical data will be sufficient for regulatory approval or completed in time to submit an applicati for regulatory approval within a particular timeframe;
- the likelihood or timing of any regulatory approval, including and the likelihood that the marketing approval of the filed ARCT-154 in Japan will be predictive of any future marketing approvals in other countries or for ARCT-154; c versions of our LUNAR-COV19 or other product candidates or of any commercial sales;
- the potential administration regimen or dosage, or ability to administer multiple doses of, any of our product candidates;
- 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 plans to research, develop and commercialize our product candidates;
- our ability to successfully commercialize, and our expectations regarding future therapeutic and commercial pote with respect to, our product candidates;
- the rate and degree of market acceptance of our product candidates;
- the success of competing therapies that are or may become available;

- the size and growth potential of the markets for our product candidates, and our ability to serve those markets an address unmet medical needs;

- our ability to obtain and maintain intellectual property protection for our product candidates;
- interactions with regulatory authorities in the United States and foreign countries;
- our ability to attract and retain experienced and seasoned scientific and management professionals;
- the performance of our third-party suppliers and manufacturers;
- manufacturers, including our ability to advance manufacturing process and capabilities, develop scalable manufacturing processes, conduct technology transfers, and prepare for and scale-up manufacturing levels for commercialization; as necessary;
- our strategic alliance partners' election to pursue development and commercialization of any programs or produc 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;
- the likelihood or timing of achieving milestones under our collaborations and other agreements;
- prompt and complete payment by our counterparties under our collaboration and other agreements, whether upo our achievement of milestones or otherwise;
- our ability to develop sales and marketing capabilities, whether alone or with potential future collaborators;
- our ability to avoid, settle or be victorious at costly litigation with shareholders, former executives or others, shoul these situations arise;
- our ability to obtain and deploy funding for our operations and to efficiently use our financial and other resources;
- our ability to continue as a going concern; and
- the accuracy of our estimates regarding future expenses, future revenues, cash flows, capital requirements need additional financing, and possible sources of revenue.

These and other forward-looking 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 in the same manner due to additional research, preclinical and clinical trial results or otherwise. The forward-looking statements contained in this quarterly report Quarterly Report are subject to risks and uncertainties, including those discussed in our other filings with the United States Securities and Exchange Commission or the Commission. (the "Commission"). Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof unless specifically stated otherwise. Although we

currently believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements.

PART I—FINANCIAL INFORMATION

Item 1. Financial Statements.

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS

(in thousands, except par value information)	September 30, 2023 (unaudited)	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 311,918	$ 391,883
Restricted cash	35,000	—
Accounts receivable	38,220	2,764
Prepaid expenses and other current assets	8,130	8,686
Total current assets	393,268	403,333
Property and equipment, net	12,715	12,415
Operating lease right-of-use asset, net	29,534	32,545
Non-current restricted cash	22,133	2,094
Total assets	$ 457,650	$ 450,387
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 18,362	$ 7,449
Accrued liabilities	28,553	30,232
Current portion of long-term debt	—	60,655
Deferred revenue	40,768	28,648

Total current liabilities	87,683	126,984
Deferred revenue, net of current portion	41,911	20,071
Long-term debt	20,000	—
Operating lease liability, net of current portion	27,018	30,216
Other non-current liabilities	976	2,804
Total liabilities	177,588	180,075
Stockholders' equity		
Common stock, $0.001 par value; 60,000 shares authorized; issued and outstanding shares were 26,723 at September 30, 2023 and 26,555 at December 31, 2022	27	27
Additional paid-in capital	636,194	608,426
Accumulated deficit	(356,159)	(338,141)
Total stockholders' equity	280,062	270,312
Total liabilities and stockholders' equity	$ 457,650	$ 450,387

(in thousands, except par value information)	March 31, 2024 (unaudited)	December 31, 2023
Assets		
Current assets:		
Cash and cash equivalents	$ 288,396	$ 292,005
Restricted cash	55,000	55,000
Accounts receivable	27,057	32,064
Prepaid expenses and other current assets	5,335	7,521
Total current assets	375,788	386,590
Property and equipment, net	11,763	12,427
Operating lease right-of-use asset, net	29,413	28,500
Non-current restricted cash	1,885	1,885
Total assets	$ 418,849	$ 429,402
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 9,144	$ 5,279
Accrued liabilities	34,770	31,881
Deferred revenue	71,516	44,829
Total current liabilities	115,430	81,989
Deferred revenue, net of current portion	11,795	42,496

Operating lease liability, net of current portion	27,652	25,907
Other non-current liabilities	—	497
Total liabilities	154,877	150,889
Stockholders' equity		
Common stock, $0.001 par value; 60,000 shares authorized; issued and outstanding shares were 26,917 at March 31, 2024 and 26,828 at December 31, 2023	27	27
Additional paid-in capital	658,628	646,352
Accumulated deficit	(394,683)	(367,866)
Total stockholders' equity	263,972	278,513
Total liabilities and stockholders' equity	$ 418,849	$ 429,402

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 (LOSS) INCOME

(unaudited)

(in thousands, except per share data)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022
Revenue:				
Collaboration revenue	$ 43,376	$ 13,369	$ 132,670	$ 45,706
Grant revenue	1,764	—	3,274	—
Total revenue	45,140	13,369	135,944	45,706
Operating expenses:				
Research and development, net	51,077	37,688	155,513	120,770
General and administrative	13,377	12,488	40,364	34,211
Total operating expenses	64,454	50,176	195,877	154,981
Loss from operations	(19,314)	(36,807)	(59,933)	(109,275)

Loss from equity-method investment	—	—	—	(515)
Gain (loss) from foreign currency	4	1,862	(175)	3,237
Gain on debt extinguishment	—	—	33,953	—
Finance income (expense), net	3,981	(321)	9,710	(1,445)
Net loss before income taxes	(15,329)	(35,266)	(16,445)	(107,998)
Provision for income taxes	893	—	1,573	—
Net loss	$ (16,222)	$ (35,266)	$ (18,018)	$ (107,998)
Net loss per share, basic and diluted	$ (0.61)	$ (1.33)	$ (0.68)	$ (4.09)
Weighted-average shares outstanding, basic and diluted	26,574	26,467	26,559	26,423
Comprehensive loss:				
Net loss	$ (16,222)	$ (35,266)	$ (18,018)	$ (107,998)
Comprehensive loss	$ (16,222)	$ (35,266)	$ (18,018)	$ (107,998)

	Three Months Ended March 31,	
(in thousands, except per share data)	2024	2023
Revenue:		
Collaboration revenue	$ 32,598	$ 79,729
Grant revenue	5,414	556
Total revenue	38,012	80,285
Operating expenses:		
Research and development, net	53,573	51,768
General and administrative	14,851	13,762
Total operating expenses	68,424	65,530
(Loss) income from operations	(30,412)	14,755
Loss from foreign currency	(53)	(328)
Gain on debt extinguishment	—	33,953
Finance income, net	4,016	2,477
Net (loss) income before income taxes	(26,449)	50,857
Provision for income taxes	368	103
Net (loss) income	$ (26,817)	$ 50,754
(Loss) earnings per share		
Basic	$ (1.00)	$ 1.91
Diluted	$ (1.00)	$ 1.87
Weighted-average shares used in calculation of (loss) earnings per share:		

Basic	26,879	26,555
Diluted	26,879	27,149
Comprehensive (loss) income:		
Net (loss) income	$ (26,817)	$ 50,754
Comprehensive (loss) income	$ (26,817)	$ 50,754

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)	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity	Common Stock		Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				Shares	Amount			
BALANCE – December 31, 2022	**26,555**	**$ 27**	**$ 426**	**$ (141)**	**$ 12**					
				50,754	50,754					
Net income	—	—	—	4	4					
Share-based compensation expense	—	—	8,182	—	8,182					
BALANCE – March 31, 2023	**26,555**	**$ 27**	**$ 608**	**$ (387)**	**$ 48**					

BALANCE – December 31, 2023						**26,828**	**$ 27**	**$ 646,352**	**$ (367,866)**	**$ 278,513**
Net loss	—	—	—	(52,550)	(52,550)	—	—	—	(26,817)	(26,817)
Share-based compensation expense	—	—	8,383	—	8,383	—	—	10,088	—	10,088
Issuance of common stock upon exercise of stock options	19	—	94	—	94	89	—	2,188	—	2,188
BALANCE – June 30, 2023	**26,574**	**$ 27**	**$ 625,085**	**$ (339,937)**	**$ 285,175**					
Net loss	—	—	—	(16,222)	(16,222)					
Share-based compensation expense	—	—	9,269	—	9,269					
Issuance of common stock upon exercise of stock options	114	—	1,231	—	1,231					
Issuance of common stock under equity plans	35	—	609	—	609					
BALANCE – September 30, 2023	**26,723**	**$ 27**	**$ 636,194**	**$ (356,159)**	**$ 280,062**					
BALANCE – March 31, 2024						**26,917**	**$ 27**	**$ 658,628**	**$ (394,683)**	**$ 263,972**

(in thousands)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Total Stockholders' Equity
BALANCE – December 31, 2021	**26,372**	**$ 26**	**$ 575,675**	**$ (347,490)**	**$ 228,211**
Net loss	—	—	—	(51,169)	(51,169)
Share-based compensation expense	—	—	7,371	—	7,371
Issuance of common stock upon exercise of stock options	35	—	336	—	336
BALANCE – March 31, 2022	**26,407**	**$ 26**	**$ 583,382**	**$ (398,659)**	**$ 184,749**

Net loss	—	—	—	(21,563)	(21,563)
Share-based compensation expense	—	—	7,274	—	7,274
Issuance of common stock upon exercise of stock options	27	—	257	—	257
BALANCE – June 30, 2022	**26,434**	**$ 26**	**$ 590,913**	**$ (420,222)**	**$ 170,717**
Net loss	—	—	—	(35,266)	(35,266)
Share-based compensation expense	—	—	9,436	—	9,436
Issuance of common stock upon exercise of stock options	36	—	369	—	369
Issuance of common stock under equity plans	22	—	411	—	411
BALANCE – September 30, 2022	**26,492**	**$ 26**	**$ 601,129**	**$ (455,488)**	**$ 145,667**

	Common Stock		Additional Paid-In	Accumulated	Total Stockholders'
(in thousands)	Shares	Amount	Capital	Deficit	Equity
BALANCE – December 31, 2022	**26,555**	**$ 27**	**$ 608,426**	**$ (338,141)**	**$ 270,312**
Net income	—	—	—	50,754	50,754
Share-based compensation expense	—	—	8,182	—	8,182
BALANCE – March 31, 2023	**26,555**	**$ 27**	**$ 616,608**	**$ (287,387)**	**$ 329,248**

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)

	Nine Months Ended September 30,		Three Months Ended March 31,	
(in thousands)	2023	2022	2024	2023
Operating activities				

Net loss	$ (18,018)	$ (107,998)		
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:				
Net (loss) income			$ (26,817)	$ 50,754
Adjustments to reconcile net (loss) income to net cash used in operating activities:				
Depreciation and amortization	2,142	976	904	578
Share-based compensation expense	25,834	24,081	10,088	8,182
Loss from equity-method investment	—	515		
Foreign currency translation loss (gain)	90	(2,976)		
Foreign currency transaction loss			53	160
Gain on debt extinguishment	(33,953)	—	—	(33,953)
Other non-cash expenses	502	5,084	—	502
Changes in assets and liabilities:				
Accounts receivable	(35,456)	1,323	5,007	(89,719)
Prepaid expense and other assets	556	(1,858)	2,186	4,549
Right-of-use assets	3,011	2,290	1,823	988
Accounts payable	10,497	5,335	3,865	11,788
Accrued liabilities	(3,437)	2,015	2,339	986
Deferred revenue	33,960	(53,578)	(4,014)	10,343
Lease liabilities	(3,198)	(3,475)	(991)	(1,029)
Net cash provided by (used in) operating activities	(17,470)	(128,266)		
Net cash used in operating activities			(5,557)	(35,871)
Investing activities				
Acquisition of property and equipment	(2,026)	(3,919)	(240)	(691)
Net cash used in investing activities	(2,026)	(3,919)	(240)	(691)
Financing activities				
Proceeds from debt	20,000	—		
Proceeds from exercise of stock options	1,325	962	2,188	—
Proceeds from the issuance of common stock under equity plans	609	411		

Payments on debt obligations	(27,364)	(2,000)	—	(27,364)
Net cash used in financing activities	(5,430)	(627)		
Net cash provided by (used in) financing activities			2,188	(27,364)
Net decrease in cash, cash equivalents and restricted cash	(24,926)	(132,812)	(3,609)	(63,926)
Cash, cash equivalents and restricted cash at beginning of the period	393,977	372,569	348,890	393,977
Cash, cash equivalents and restricted cash at end of the period	$ 369,051	$ 239,757	$ 345,281	$ 330,051

	Nine Months Ended September 30,		Three Months Ended March 31,	
	2023	2022	2024	2023
Supplemental disclosure of cash flow information				
Cash paid for interest	$ 2,102	$ 585	$ —	$ 2,102
Non-cash investing activities				
Non-cash asset disposal			$ 473	$ —
Right-of-use assets acquired through operating leases	$ —	$ 30,191	$ 2,736	$ —
Purchase of property and equipment in accounts payable and accrued expenses	$ 416	$ 2,761		
Purchase of property and equipment in accounts payable			$ —	$ 107

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

ARCTURUS THERAPEUTICS HOLDINGS INC. AND ITS SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

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

Description of Business

Arcturus Therapeutics Holdings Inc. (the “Company” or "Arcturus") is a global late-stage clinical messenger RNA medicines company focused on the development of infectious disease vaccines and significant opportunities within liver and respiratory rare diseases. The Company became a clinical stage company during 2020 when it announced that its Investigational New Drug (“IND”) application for ornithine transcarbamylase (“OTC”) deficiency and its Clinical Trial Application (“CTA”) for candidate LUNAR-COV19 were approved by applicable health authorities.

Basis of Presentation

The accompanying condensed consolidated financial statements include the accounts of Arcturus and its subsidiaries and 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 consolidated financial statements and footnotes included in the Company’s Annual Report on Form 10-K for the year ended December 31, 2022 December 31, 2023.

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, the equity-method investment, share-based compensation, expense, accruals for liabilities, income taxes, revenue and deferred revenue, leases, 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.

Joint Ventures, Equity Method Investments and Variable Interest Entities

Investments for which the Company exercises significant influence, but does not have control are accounted for under the equity method. Equity method investment activity is related to the Companay's Company's joint venture in ARCALIS, Inc. with Axcelead, Inc. As of September 30, 2023, the Company's ownership in ARCALIS was 45.8% Inc (“Axcelead”). ARCALIS has received financial grants of $165 million to date from the Japanese government, which are subject to certain terms and conditions that have not yet been met, that may increase the value of ARCALIS in the future. The Company’s share of the investees' investee's results is presented as either income or loss from equity method investees equity-method investment in the accompanying condensed consolidated statements of operations and comprehensive loss. (loss) income.

Liquidity

The Company has incurred significant operating losses since its inception. As of September 30, 2023 March 31, 2024 and December 31, 2022 December 31, 2023, the Company had an accumulated deficit of $356.2 394.7 million and $338.1 367.9 million, respectively.

The Company's activities since inception have consisted principally of research and development activities, general and administrative 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. From the Company's inception through September 30, 2023 March 31, 2024, the Company has funded its operations principally with the proceeds from revenues earned through collaboration agreements, the sale of capital stock, revenues earned through collaboration agreements, expense reimbursements from government contracts and proceeds from long-term debt.

At September 30, 2023 March 31, 2024, the Company's balance of cash and cash equivalents, including restricted cash, and non-current restricted cash, was $369.1 345.3 million.

Management believes that it has sufficient working capital on hand to fund operations through at least the next twelve months from the date these condensed consolidated financial statements were available to be issued. There can be no assurance that the

Company will be successful in securing additional funding, that the Company's projections of its future working capital needs will prove accurate, or that any additional funding would be sufficient to continue operations in future years.

Segment Information

In making decisions regarding resource allocation and assessing performance, the chief operating decision-maker identifies operating Operating segments are identified as components of an enterprise for about which separate discrete financial information is available for evaluation. 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

At contract inception, the Company analyzes executed its collaboration arrangements to assess whether such arrangements involve joint operating activities performed by parties that are both active participants in the activities and exposed to significant risks and rewards dependent on the commercial success of such activities and therefore within the scope of ASC Accounting Standards Codification (“ASC”) Topic 808, Collaborative Arrangements (ASC 808) (“ASC 808”). For collaboration arrangements within the scope of ASC 808 that contain multiple elements, the Company first determines which elements of the collaboration reflect a vendor-customer relationship and are therefore within the scope of ASC 606.

The Company determines revenue recognition for arrangements within the scope of Topic ASC 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 company satisfies a performance obligation.

The terms of the Company’s revenue agreements include license fees, upfront payments, milestone payments, reimbursement for research and development activities, option exercise fees, consulting and related technology transfer 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 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 Company will either receive the milestone payment or will not, which makes the potential milestone payment a binary event. 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 collaborative partner and is the unit of account in Topic ASC 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.

For performance obligations that are recognized over time, the Company measures the progress using an input method. The input methods used are based on the effort expended or costs incurred toward the satisfaction of the performance obligation. The Company estimates the amount of effort expended, including the time estimated it will take to complete the activities, or costs incurred in a given period, relative to the estimated total effort or costs to satisfy the performance obligation. This approach requires the Company to make numerous estimates and use significant judgment. If estimates or judgments change over the course of the collaboration, a cumulative catch up of revenue is recognized in the period such changes are identified.

See “Note 2, Revenue” for specific details surrounding the Company’s arrangements.

Leases

The Company determines if an arrangement is a lease at inception. Lease right-of-use assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. For operating leases with an initial term greater than 12 months, the Company recognizes operating lease right-of-use assets and operating lease liabilities based on the present value of lease payments over the lease term at the commencement date. Operating lease right-of-use assets are comprised of the lease liability plus any lease payments made and excludes lease incentives. Lease terms include options to renew or terminate the lease when the Company is reasonably certain that the renewal option will be exercised or when it is reasonably certain that the termination option will not be exercised. For the Company's operating leases, if the interest rate used to determine the present value of future lease payments is not readily determinable, the Company estimates its incremental borrowing rate as the discount rate for the lease. The Company's incremental borrowing rate is estimated to approximate the interest rate on a collateralized basis with similar terms and payments, and in similar economic environments. Lease expense for lease payments is recognized on a straight-line basis over the lease term. The Company has elected the practical expedient to not separate lease and non-lease components.

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See *"Note 9, Commitments and Contingencies"* for specific details surrounding the Company's leases.

6

Research and Development Costs, Net

All research and development costs are expensed as incurred. Research and development costs consist primarily of salaries, employee benefits, costs associated with preclinical studies and clinical trials (including amounts paid to clinical research organizations and other professional services), in process in-process research and development expenses, pre-launch inventory and license agreement expenses. Research and development expenses are presented net of any grants and prelaunch inventory. grants. Payments made prior to the performance receipt of goods or services to be used in research and development services are capitalized until the goods are received or the services are performed.

The Company records accruals for estimated research and development costs, comprising payments for work performed by third party contractors, laboratories, participating clinical trial sites, and others. Some of these contractors bill monthly based on actual services performed, while others bill periodically based upon achieving certain contractual milestones. For the latter, the Company accrues the expenses as goods or services are used or rendered.

Clinical trial activities performed by third parties are accrued and expensed based upon estimates of the proportion of work completed over the life of the individual clinical trial and patient enrollment rates in accordance with agreements established with Clinical Research Organizations ("CROs") and clinical trial sites. Estimates are determined by reviewing contracts, vendor agreements and purchase orders, and through discussions with internal clinical personnel and external service providers as to the progress or stage of completion of trials or services and the agreed-upon fee to be paid for such services.

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 and comprehensive loss, (loss) income, 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.

Restricted Cash

The Restricted cash includes collateral pledged and held at the Company's securities accounts pursuant to a security agreement with Wells Fargo Bank, National Association ("Wells Fargo") (Note 5). At March 31, 2024, such collateral amounted to $55.0 million.

Restricted cash also includes cash required to be set aside as security for lease payments and to maintain a letter of credit for the benefit of the landlord for the Company's offices. At March 31, 2024 and 2023, the Company includes the had restricted cash balance of $1.9 million and $2.1 million, respectively, in conjunction with property leases in San Diego, California, and such restriction is expected to be removed at the cash, cash equivalents and restricted cash reconciliation end of operating, investing and financing activities in the condensed consolidated statements of cash flows. lease term.

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, 2023	September 30, 2022	March 31, 2024	March 31, 2023
Cash and cash equivalents	$ 311,918	$ 237,676	$ 288,396	$ 327,935
Restricted cash	35,000	—	55,000	—
Non-current restricted cash	22,133	2,081	1,885	2,116

Total cash, cash equivalents and restricted cash shown in the statement of cash flows	$ 369,051	$ 239,757	$ 345,281	$ 330,051

Net Loss (Loss) Earnings per Share

Basic net loss (loss) earnings per share is calculated by dividing the net loss (loss) earnings by the weighted-average number of shares of common stock outstanding for the period, without consideration for common stock equivalents. Diluted net loss (loss) earnings per share is calculated by dividing the net loss (loss) earnings 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 for the three months ended March 31, 2024 were comprised of stock options and restricted stock units. Dilutive shares of common stock for the three months ended March 31, 2023 were comprised of stock options.

No dividends were declared or paid during the reported periods.

Recently Issued Accounting Standards Not Yet Adopted

From time to time, new accounting pronouncements are issued by the FASB Financial Accounting Standards Board or other standard setting bodies and adopted by the Company as of the specified effective date. Unless otherwise discussed, the Company believes that the impact of recently issued standards that are not yet effective will not have a material impact on the condensed consolidated financial statements and disclosures.

Note 2. Revenue

The Company has entered into license agreements and collaborative research and development arrangements with pharmaceutical and biotechnology companies, as well as consulting, related technology transfer, and product revenue and government grant agreements. Under these arrangements, the Company is entitled to receive license fees, consulting fees, product fees, technological transfer fees, upfront payments, milestone payments if and when certain research and development milestones, or technology transfer milestones or success-based 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 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 and vaccines.

The following table presents changes during the nine three months ended September 30, 2023 March 31, 2024 in the balances of contract assets and liabilities as compared to what was disclosed in the Company's Annual Report.

(in thousands)	December 31, 2022	Additions	Deductions	September 30, 2023	December 31, 2023	Additions	Deductions	March 31, 2024
Contract Assets:								
Accounts receivable	$ 2,764	$ 244	$ (788)	$ 38,220	$ 32,064	$ 34,068	$ (39,075)	$ 27,057
Contract Liabilities:								
Deferred revenue	$ 48,719	$ 904	$ (944)	$ 82,679	$ 87,325	$ 33,998	$ (38,012)	$ 83,311

The following table summarizes the Company's revenues for the periods indicated.

	For the Three Months Ended September 30,		For the Nine Months Ended September 30,		For the Three Months Ended March 31,	
(in thousands)	2023	2022	2023	2022	2024	2023
Collaboration Revenue:						

CSL Seqirus	$ 43,433	$ —	$ 129,257	$ —	$ 32,381	$ 78,218
Vinbiocare	—	11,237	—	26,815		
Janssen	—	934	660	2,593	—	491
Other collaboration revenue	(57)	1,198	2,753	3,798	217	1,020
Total collaboration revenue	$ 43,376	$ 13,369	$ 132,670	$ 45,706	$ 32,598	$ 79,729
Grant revenue:						
BARDA	$ 1,764	$ —	$ 3,274	$ —	$ 5,414	$ 556
Total grant revenue	$ 1,764	$ —	$ 3,274	$ —	$ 5,414	$ 556

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

CSL Seqirus

On November 1, 2022, the Company entered into a Collaboration and License Agreement (as amended, the "CSL Collaboration Agreement") with Seqirus, Inc., a part of CSL Limited ("CSL Seqirus"), for the global exclusive rights to research, develop, manufacture, and commercialize vaccines. Under the terms of the CSL Collaboration Agreement, the Company provides CSL Seqirus with an exclusive global license to its mRNA technology (including STARR®) and LUNAR® lipid-mediated delivery, along with mRNA drug substance and drug product manufacturing process. CSL Seqirus will lead development and commercialization of vaccines under the collaboration. The collaboration plans to advance vaccines against SARS-CoV-2 (COVID-19), influenza, pandemic preparedness as well as three other respiratory infectious diseases.

The Company received a $200.0 million upfront payment and is eligible to receive over $1.3 billion in development milestones if all products are registered in the licensed fields and entitled to potentially receive up to $3.0 billion in commercial milestones based on net sales "net sale" of vaccines in the various fields. In addition, the Company is eligible to receive a 40% net profit share for COVID-19 vaccine products and up to low double-digit royalties for vaccines against flu, pandemic preparedness and three other respiratory pathogens.

In March 2023, During the first quarter of 2024, the Company achieved development milestones, including milestones associated with nominating next generation vaccine candidates, resulting in a $90.0 19.2 million received from CSL Seqirus during the second quarter of 2023. In April 2023 the Company also received an advance payment of $23.6 million for the manufacturing and supply of ARCT-154 drug product. The advance payment was for specified manufacturing runs of ARCT-154 which include the drug substance utilized, as well as the reservation fees and related manufacturing requirements. The Company concluded that the promise to manufacture and supply ARCT-154 drug product is a customer option as part of the CSL Collaboration Agreement and is accounted for as a separate contract. The advance payment of $23.6 million is included in deferred revenue as of September 30, 2023.

In September 2023, the Company achieved a development milestone related to the completion CSL Collaboration Agreement which was included in accounts receivable as of the first GMP batch manufacture of drug product in a multi-dose vial for clinical studies in the SARS-CoV-2 field. The Company invoiced CSL Seqirus and added $35.0 million to the transaction price during the three months ended September 30, 2023 March 31, 2024. The Company anticipates that it will receive this payment from CSL Seqirus during the fourth quarter of 2023.

In evaluating the CSL Collaboration Agreement in accordance with Accounting Standards Codification ("ASC") Topic ASC 606, the Company concluded that CSL Seqirus is a customer. The Company identified all promised goods/services within the CSL Collaboration Agreement, and when combining certain promised goods/services, the Company concluded that there are five distinct performance obligations. The nature of the performance obligations consists of delivery of the vaccine license, research and development services for COVID and non-COVID vaccines and regulatory activities for COVID vaccines. For each performance obligation, the Company estimated the standalone selling price based on 1) in the case of the license, the fair value using costs to recreate plus margin method and 2) in the case of research and development services and regulatory activities, cost plus margin for estimated full-time equivalent ("FTE") costs, direct costs including laboratory supplies, contractors, and other out-of-pocket expenses for research and development services and regulatory activities.

As of September 30, 2023 March 31, 2024, the transaction price consisted of upfront consideration received and milestones achieved in March 2023 and September 2023. achieved. Additional variable consideration was not included in the transaction price at September 30, 2023 March 31, 2024 because the Company could not conclude that it is probable that including the variable consideration will not result in a significant revenue reversal.

The Company allocated the transaction price to the performance obligations in proportion to their standalone selling price. The vaccine license was recognized at the point in time when it was transferred and any additional consideration allocated to the license is recognized at the point that the consideration becomes probable of non-reversal as the performance obligation has been delivered. in 2022. The research and development and regulatory activities performance obligations are recognized over a period of time based on the percentage of services rendered using the input method,

meaning actual costs incurred divided by total costs budgeted to satisfy the performance obligation. Any consideration related to sales-based royalties will be recognized when the amounts are probable of non-reversal, provided that the reported sales are reliably measurable and the Company has no remaining promised goods/services, as they

are constrained and therefore have also been excluded from the transaction price. The revenue recognized during in the first quarter ended September 30, 2023 of 2024 relates to the license delivered, milestones achieved and services performed. performed through March 31, 2024.

Total deferred revenue as of September 30, 2023 March 31, 2024 and December 31, 2022 December 31, 2023 for the CSL Collaboration Agreement was $82.5 83.3 million and $45.6 87.1 million, respectively.

In August During 2023, the Company also received an advance payment of $23.6 million for the manufacturing and supply of ARCT-154 drug product. The advance payment was for specified manufacturing runs of ARCT-154 which include the drug substance utilized, as well as the reservation fees and related manufacturing requirements. The Company concluded that the promise to manufacture and supply ARCT-154 drug product is a customer option as part of the CSL Collaboration Agreement and is accounted for as a separate contract. Approximately $18.8 million remained in deferred revenue as of March 31, 2024 and will be recognized as revenue when the drug product is transferred to CSL Seqirus.

During 2023, the Company entered into an amendment to the CSL Collaboration Agreement, pursuant to which the Company agreed to sponsor and conduct a Phase I clinical study in the influenza field. As part of the amendment, the Company and CSL Seqirus agreed to a received $17.5 million milestone payment which was met during the third quarter of 2023 upon the execution of a Phase I study start-up agreement. from CSL Seqirus. The amendment also provides for up to $1.5 million in additional payments which are achievable upon meeting certain clinical milestones relating to the Phase I clinical study in the influenza field. The Company previously concluded that the expansion of research and development support services under the CSL Collaboration Agreement represented an option that was not a material right. Therefore the Company concluded the promise to sponsor and conduct the Phase I clinical study is a separate contract and the sole performance obligation under the new arrangement. During the third quarter of 2023, ended March 31, 2024, the Company recognized $1.2 2.2 million related to the performance obligation and recorded the remaining amount of $16.3 12.9 million to is included in deferred revenue.

During the fourth quarter of 2023, the Company received an advance payment of $5.3 million from CSL Seqirus for manufacturing activities related to COVID-19 vaccine product. During the first quarter of 2024, the Company received an additional advance payment of $5.1 million from CSL Seqirus for manufacturing activities related to COVID-19 vaccine product. The Company

Vinbiocare*concluded that the promise to perform manufacturing activities is a customer option as part of the CSL Collaboration Agreement and is accounted for as a separate contract. The advance payments are included in deferred revenue as of March 31, 2024 and will be recognized as revenue when the vaccine product is transferred to CSL Seqirus.*

During 2021 In March 2024, the Company entered into an amendment to the CSL Collaboration Agreement, pursuant to which the parties agreed to, among other things, adjust (i) the development plans for certain agreements (collectively, the "Vinbiocare License & Supply Agreements") with Vinbiocare Biotechnology Joint Stock Company ("Vinbiocare"), a member of Vingroup Joint Stock Company, whereby the Company would provide technical expertise and support services product candidates, (ii) various development milestones related to Vinbiocare to assist in the build out of a mRNA drug such product manufacturing facility in Vietnam. The Company received an upfront payment in aggregate of $40.0 million as part candidates, (iii) provisions of the Vinbiocare License & Supply Agreements. In October 2022, the Company and Vinbiocare executed a letter of agreement terminating the License & Supply Agreements. The Company incurred no financial penalties in connection with the termination CSL Collaboration Agreement related to specific royalty payments, (iii) provisions of the License & Supply Agreements CSL Collaboration Agreement related to distributors, and has no further financial obligations to Vinbiocare under these terminated agreements.

In October 2022, in association with the termination of the License & Supply Agreements, the Company signed the Study Support Agreement with Vinbiocare which provides that Vinbiocare shall continue to serve as the regulatory and financial sponsor of clinical studies conducted in Vietnam of ARCT-154 pursuant to the Company's arrangements with Vinbiocare (the "Study Support Agreement"). To support the continuing activities of these studies, the Study Support Agreement further provides for the Company to conduct certain services and to compensate Vinbiocare to help achieve the objectives of these studies. In February 2023, the Company agreed to provide additional financial support in the amount of approximately $2.1 million to allow Vinbiocare to provide additional study support duties (iv) proprietary payment calculations related to the ARCT-154 clinical study. As a result, the Company reserved $11.8 million of the original upfront payment to be paid to Vinbiocare over the future periods pursuant to the Study Support Agreement by reclassifying a portion of the upfront payment received from Vinbiocare pursuant to the License & Supply Agreements, from deferred revenue to short-term and long-term liabilities, based on the anticipated timing of the payments to Vinbiocare, and removed that portion of the upfront payment from the transaction price of the modified arrangement. The transaction price was not adjusted for payments that are contingent upon the occurrence of future regulatory or sales-related events based on the information currently available to the Company.

The Company has concluded that it has no remaining performance obligations under its prior arrangements with Vinbiocare as summarized above as of September 30, 2023. As of September 30, 2023, the Company has accrued liabilities related to this arrangement of $3.5 million in current liabilities and $1.0 million in non-current liabilities that will be paid upon the occurrence of specified events through the first quarter of 2025. Vinbiocare is also eligible to receive a single digit percentage of amounts from net sales, if any, of ARCT-154 (or next-generation COVID vaccine) up to a capped amount of low single digit millions. The Company has no remaining deferred revenue as of September 30, 2023 and December 31, 2022. foregoing.

BARDA Grant

In August 2022, the Company entered into a cost reimbursement contract with the Biomedical Advanced Research and Development Authority ("BARDA"), a division of the Office of the Assistant Secretary for Preparedness and Response (ASPR) within the U.S. Department of Health and Human Services (HHS) for an award of up to $63.2 million for the development of a pandemic influenza vaccine using the Company's STARR® STARR® self-amplifying mRNA vaccine platform technology. The Company earns grant revenue for performing tasks under the agreement.

The Company determined that the agreement with BARDA is not in the scope of ASC 808 or ASC 606. Applying International Accounting Standards No. 20 ("IAS 20"), Accounting for Government Grants and Disclosure of Government Assistance, by analogy, the Company recognizes grant revenue from the reimbursement of direct out-of-pocket expenses, overhead allocations and fringe benefits for research costs associated with the grant. The costs associated with these reimbursements are reflected as a component of research and development expenses expense in the Company's condensed consolidated statements of operations and comprehensive loss. income (loss).

The Company recognized $1.8 5.5 million and $3.3 0.6 million of revenue during the three and nine months ended September 30, 2023, March 31, 2024 and 2023, respectively. As of September 30, 2023 March 31, 2024, the remaining available funding net of revenue earned was $59.6 48.4 million.

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 established 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 in 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, restricted cash, accounts receivable, accounts payable, accrued liabilities and the Singapore Loan (as defined below) approximate their respective fair values due to their relative short maturities. Prior to payoff and forgiveness of

long-term debt in the first quarter of 2023, the carrying amounts of long-term debt for the amount drawn on the Company's debt facility approximated fair value as the interest rate was variable and reflected current market rates.

As of September 30, 2023 March 31, 2024 and December 31, 2022 December 31, 2023, 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 balances consisted of the following:

(in thousands)	September 30, 2023	December 31, 2022	March 31, 2024	December 31, 2023
Research equipment	$ 15,764	$ 10,251	$ 16,456	$ 16,046
Computers and software	1,370	1,154	1,131	1,275
Office equipment and furniture	958	958	703	958
Leasehold improvements	2,548	2,491	2,644	2,655
Construction in progress	—	3,344	—	233
Total	20,640	18,198	20,934	21,167
Less accumulated depreciation and amortization	(7,925)	(5,783)	(9,171)	(8,740)
Property and equipment, net	$ 12,715	$ 12,415	$ 11,763	$ 12,427

Depreciation and amortization expense was $0.8 million and $2.1 0.9 million for the three and nine months ended September 30, 2023, respectively, March 31, 2024 and $0.4 million and $1.0 0.6 million for the three and nine months ended September 30, 2022, respectively. March 31, 2023. Construction in progress at December 31, 2022 is primarily includes comprised of research equipment that was not yet placed into service during 2023. in service.

Accrued liabilities consisted of the following:

(in thousands)	September 30, 2023	December 31, 2022	March 31, 2024	December 31, 2023
Accrued compensation	$ 10,200	$ 4,038	$ 7,102	$ 5,918
Cystic Fibrosis Foundation liability			7,649	7,633
Income tax payable	482	1,295	979	641
Current portion of operating lease liability	4,200	3,884	4,270	4,309
Clinical accruals	3,180	4,531		

Contractual liabilities	3,492	7,468		
Clinical trial accruals			1,234	2,333
Vinbiocare contractual liabilities			2,993	2,514
Other accrued research and development expenses	6,999	9,016	10,543	8,533
Total	$ 28,553	$ 30,232	$ 34,770	$ 31,881

Note 5. Debt

Wells Fargo Credit Agreement

On April 21, 2023, the Company's wholly-owned subsidiary, Arcturus Therapeutics, Inc. entered into a credit agreement with Wells Fargo Bank, National Association ("Wells Fargo") whereby Wells Fargo will make a $50.0 million revolving credit line available to the Company (the "Loan") and each draw on the Loan evidenced by a revolving line of credit note (the "Note").

Borrowings under the agreement will bear interest at a rate of 1.00% above either the Daily Simple SOFR or Term SOFR (as such terms are defined in the Note), with "SOFR" being the rate per annum equal to the secured overnight financing rate as administered by the Federal Reserve Bank of New York. If an Event of Default (as defined in the agreement) occurs, then all Loans shall bear interest at a rate equal to 2.00% above the interest rate applicable immediately prior to the occurrence of the Event of Default.

The term of the agreement is two years, with an option for one-year renewals subject to Wells Fargo approval and the Company furnishing to Wells Fargo a non-refundable commitment fee equal to 0.25% of the Loan amount for each such renewal. There is no penalty for terminating the facility prior to the maturity date of the Note. As collateral, the Company has agreed to pledge $55.0 million in cash to be held at the Company's securities accounts with Wells Fargo Securities, LLC, an affiliate of Wells Fargo, pursuant to a security agreement. In September 2023, the Company drew down $20.0 No million from the Loan. borrowings were outstanding as of March 31, 2024.

Termination of the Manufacturing Support Agreement with EDB

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 agreed to make a term loan (the "Singapore Loan") of S$62.1 million (approximately $46.6 million) to the Company, subject to the satisfaction of customary deliveries, to support the manufacture of the LUNAR-COV19 vaccine candidate (ARCT-021). The Singapore Loan accrued interest at a rate of 4.5% per annum

calculated on a daily basis. The Company elected to borrow the full amount available under the Support Agreement of S$62.1 million ($ (approximately $46.6 million) on January 29, 2021.

During the first quarter of 2023, the parties terminated the Support Agreement and the EDB agreed to an extension of the reconciliation period to March 22, 2023, with unused funds not utilized for the manufacture of ARCT-021 as of such date returned to the EDB. As of December 31, 2022, the outstanding balance of the Singapore Loan, which includes accrued interest, was $50.4 million of which the Company paid S$22.8 million ($ (approximately $17.1 million) in March 2023. During the first quarter of 2023, the remaining principal portion of the Singapore Loan plus accrued interest, totaling $34.0 million, was forgiven and recorded as a gain on debt extinguishment in the condensed consolidated statement of operations and comprehensive loss.

For the three months ended September 30, 2023 March 31, 2024, the Company recorded no interest expense, compared to interest expense of $0.5 million for the same period in 2022. For the nine months ended September 30, 2023, the Company recorded interest expense of $0.5 million, compared to interest expense of $1.6 million for the same period in 2022. 2023.

Termination of Agreement with Western Alliance Bank

On March 14, 2023, the Loan and Security Agreement, dated as of October 12, 2018 (as amended and supplemented, the “Western Alliance Agreement”) with Western Alliance Bank, an Arizona corporation (“Western Alliance”), was terminated (the “Termination”) upon the receipt by Western Alliance of a payoff amount of approximately $7.4 million from the Company. The Western Alliance Agreement provided for a collateralized term loan in the aggregate principal amount of up to $15.0 million, with

interest at a floating rate ranging from 1.25% to 2.75% above the prime rate and a maturity date of October 30, 2023. The payoff amount was made by the Company to Western Alliance from available cash on hand, pursuant to a payoff letter, and included payment of (i) approximately $7.0 million in principal and interest, (ii) $0.3 million fee payable upon prepayment as a result of prior FDA approval of an IND and (iii) de minimis amounts in prepayment charges and various operational fees. The Company was released from all liens under the Western Alliance Agreement.

For the three months ended September 30, 2023 March 31, 2024, the Company recorded no interest expense, compared to interest expense of $0.7 0.3 million for the same period in 2022. For the nine months ended September 30, 2023 and 2022, the Company recorded interest expense of $0.3 million and $2.1 million, respectively. 2023.

Note 6. Stockholders' Equity

Net Loss (Loss) Earnings per Share

Potentially dilutive securities that were not included in the calculation of diluted net loss per share for the three and nine months ended September 30, 2023 March 31, 2024 as they were anti-dilutive totaled 1.2 1.4 million and 0.8 million, respectively, and 0.5 million and 0.7 million million. Potentially dilutive securities that were not included in the calculation of diluted earnings per share for the three and nine months ended September 30, 2022 March 31, 2023 as they were anti-dilutive totaled 5.2 million.

Sales Agreement

On December 23, 2022, respectively. the Company entered into a Controlled Equity Offering℠ Sales Agreement (the "Sales Agreement") with Cantor Fitzgerald & Co. ("Cantor") and Wells Fargo Securities, LLC ("Wells Fargo Securities"), relating to shares of the Company's common stock. In accordance with the terms of the Sales Agreement, the Company may offer and sell shares of its common stock having an aggregate offering price of up to $200,000,000 from time to time through Cantor or Wells Fargo Securities, each acting as the Company's sales agent. During the period ended March 31, 2024, the Company did not offer or sell any shares of common stock pursuant to the Sales Agreement.

Note 7. Share-Based Compensation Expense

In June 2022 at the Company's 2022 Annual Meeting of Stockholders (the "2022 Annual Meeting"), the stockholders of the Company approved an amendment to the Company's 2019 Omnibus Equity Incentive Plan (as amended, the "2019 Plan") which, among other things, increased the aggregate number of shares authorized for use in making awards to eligible persons under the 2019 Plan by 3,750,000 shares, for a total of up to 8,750,000 shares available for issuance. As of September 30, 2023 March 31, 2024, a total of 1,523,452 379,084 shares remain available for future issuance under the 2019 Plan, subject to the terms of the 2019 Plan.

In October 2021, the Company adopted the 2021 Inducement Equity Incentive Plan which covers the award of up to 1,000,000 shares of common stock (the "2021 Plan") effective as of October 15, 2021. Approval of the Company's stockholders is not required as a condition to the effectiveness of the 2021 Plan for so long as the plan is in compliance with applicable Nasdaq inducement plan rules. In April 2022, the compensation committee of the Company's board of directors approved a proposal to reduce the total number of shares available for future issuance under the 2021 Plan to 130,000. As of September 30, 2023 March 31, 2024, a total of 100,725 124,697 shares remain available for future issuance under the 2021 Plan, subject to the terms of the 2021 Plan.

Stock Options

Share-based compensation expense included in the Company's condensed consolidated statements of operations and comprehensive loss for the three and nine months ended September 30, 2023 March 31, 2024 and 2022 2023 was as follows:

(in thousands)	For the Three Months Ended September 30, 2023	For the Three Months Ended September 30, 2022	For the Nine Months Ended September 30, 2023	For the Nine Months Ended September 30, 2022	For the Three Months Ended March 31, 2024	For the Three Months Ended March 31, 2023
Research and development	3,86 $ 3	3,99 $ 6	11,11 $ 2	10,81 $ 1	$ 4,803	$ 3,508
General and administrative	5,40 6	5,44 0	14,72 2	13,27 0	5,285	4,674
Total	9,26 $ 9	9,43 $ 6	25,83 $ 4	24,08 $ 1	$ 10,088	$ 8,182

Note 8. Income Taxes

The Company is subject to taxation in the United States and various states. The Company computes its quarterly income tax provision by using a forecasted annual effective tax rate and adjusts for any discrete items arising during the quarter. The primary difference between the effective tax rate and the federal statutory tax rate is due to federal and state income tax expense offset by valuation allowance on the Company's deferred tax assets.

For the three and nine months ended September 30, 2023, March 31, 2024 and 2023, the Company recorded $0.9 0.4 million and $1.6 0.1 million of income tax expense, respectively. No tax benefit was provided for losses incurred in United States because those losses are offset by a full valuation allowance.

Note 9. Commitments and Contingencies

Cystic Fibrosis Foundation Agreement

On September 25, 2023, the Company amended its Development Program Letter Agreement, dated May 16, 2017 and as amended July 13, 2018 and August 1, 2019, with the Cystic Fibrosis Foundation (“CFF”). Pursuant to the amendment, (i) CFF increased the amount it will award to advance LUNAR-CF to $24.6 million from approximately $15.6 million (ii) and the Company agreed to incur at least $15.0 million toward activities under the research plan. Subsequent to September 30, 2023, the Company received the full payment from CFF related to the amendment. The funds received from CFF will be recognized as contra research and development expense beginning in For the three months ended September

30, 2023. Total March 31, 2024 and 2023, the Company recognized no contra expense related to CFF. As of March 31, 2024 and December 31, 2023, $1.8 7.6 million was recognized during the three and nine months ended September 30, 2023. For the three and nine months ended September 30, 2022, the Company recognized contra expense of $0.5 million and $3.2 million, respectively, which related to the August 2019 amendment. As of September 30, 2023 and December 31, 2022, no amounts were included in accrued liabilities.

Leases

In October 2017, the Company entered into a non-cancellable operating lease agreement for office space adjacent to its previously occupied 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 $0.1 million. The lease may be extended for one five-year period at the then current market rate with annual escalations; however, In March 2024, the Company deemed negotiated with the extension option not reasonably certain lessor to be exercised and therefore excluded the option from extend the lease terms. through March 2027.

The Company entered into an irrevocable standby letter of credit with the landlord for a security deposit of $0.1 million 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 second non-cancellable operating lease agreement for office space near its current headquarters. The lease extended for 13 months from the commencement date and included a right to extend the lease for one twelve-month period. In February 2021, the Company opted to extend the lease through March 2025 to coincide with the lease term of the Company's headquarters. In January 2024, the Company vacated the office space, and has no intention of operating out of this location in the future. Arcturus is currently engaged in a lease for this property through March 31, 2025. It is obligated to continue to make the remaining payments per the lease agreement through the end of the term. As such, the Company recorded an impairment loss in the amount of $1.3 million during the three months ended March 31, 2024, as it will not receive any future economic benefits from the lease.

In September 2021, the Company entered into a third non-cancellable lease agreement for office, research and development, engineering and laboratory space near its current headquarters and lease term commenced during the second quarter of 2022. The initial term of the lease extends ten years and eight months from the date of possession, and the Company has the right to extend the term of the lease for an additional five-year period. When the lease term was determined for the operating lease right-of-use assets and lease liabilities, the extension option for the lease was not included. The lease has a monthly base rent ranging from $0.3 million to $0.4 million which escalates over the lease term. The Company received a free rent period of four months and also pays for various operating costs, including utilities and real property taxes. The Company entered into an irrevocable standby letter of credit with the landlord for a security deposit

of $2.0 million 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.

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, 2023 March 31, 2024, the remaining payments of the operating lease liability were as follows:

(in thousands)	Remaining Lease Payments	Remaining Lease Payments
2023	$ 1,378	
2024	5,646	$ 4,257
2025	4,019	5,019
2026	3,603	5,274
Thereafter	23,283	23,703
Total remaining lease payments	37,929	38,253
Less: imputed interest	(6,711)	(6,331)
Total operating lease liabilities	$ 31,218	$ 31,922
Weighted-average remaining lease term	8.3	7.7
Weighted-average discount rate	4.9%	4.8%

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 terms. Operating lease costs were $1.4 million for the three months ended March 31, 2024 and $4.2 1.4 million for the three and nine months ended September 30, 2023, respectively, and $1.4 million and $3.3 million for the three and nine months ended September 30, 2022 March 31, 2023, respectively.

Note 10. Related Party Transactions

On December 13, 2022, Vallon Pharmaceuticals, Inc. (“Vallon”) entered into an agreement with GRI Bio, Inc. (“GRI Bio”) pursuant to which GRI Bio was to merge with a wholly-owned subsidiary of Vallon in an all-stock transaction. The transaction closed in April 2023 and the Company's executive resigned from the board of directors of Vallon. Following the closing of the merger, the combined company now operates under the name “GRI Bio, Inc.” and will focus on the development of GRI Bio’s pipeline and trade on the Nasdaq under the ticker symbol “GRI”. Following the closing of the merger, the Company holds 28,125 shares in GRI Bio, or approximately 1%. Upon the closing of the merger, the Company determined that it did not have the ability to exercise significant influence over operating and financial policies of GRI Bio. As such, the Company discontinued equity method of accounting for its investment in GRI Bio.

See “Note 1, Joint Ventures, Equity Method Investments and Variable Interest Entities” for specific details surrounding the Company’s agreement with Axcelead to form the joint venture entity, ARCALIS, Inc.

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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 period ended September 30, 2023 March 31, 2024. Unless otherwise specified herein, references to the “Company,” “Arcturus,” “we,” “our” and “us” mean Arcturus Therapeutics Holdings Inc. and its consolidated subsidiaries. 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, 2022 December 31, 2023 (the “2022 “2023 Annual Report”), which was filed with the U.S. Securities and Exchange Commission (the “Commission”) on March 29, 2023 March 14, 2024. Unless otherwise defined herein, capitalized words and expressions used herein shall have the same meanings ascribed to them in the 2022 2023 Annual Report.

This report includes forward-looking statements which, although based on assumptions that we consider reasonable, are subject to risks and uncertainties which could cause actual events or conditions to differ materially from those currently anticipated and expressed or implied by such forward-looking statements.

You should read this report and the documents that we reference in this report and have filed as exhibits to this report completely and with the understanding that our actual future results may be materially different from what we expect. You should also review the factors and risks we describe in the reports we will file or submit from time to time with the Commission after the date of this report.

Overview

We are a global late-stage clinical messenger RNA medicines company focused on the development of infectious disease vaccines and opportunities within liver and respiratory rare diseases. In addition to our messenger RNA ("mRNA") platform, our proprietary lipid nanoparticle ("LNP") delivery system, LUNAR®, has the potential to may enable multiple nucleic acid medicines, and our medicines. Our proprietary self-amplifying mRNA technology (Self-Transcribing and Replicating RNA, or STARR®, technology) has the potential to provide provides a longer-lasting RNA and sustained protein expression broader response at lower dose levels as compared to than conventional mRNA. In 2023, our COVID-19 vaccine, ARCT-154, received marketing authorization approval in Japan and became the world's first approved self-amplifying RNA (sa-mRNA) vaccine.

We are leveraging our proprietary LUNAR® platform and our nucleic acid technologies to develop and advance a pipeline of mRNA-based vaccines and therapeutics for infectious diseases and rare genetic disorders with significant unmet medical needs. We continue to expand this platform by adding new innovative delivery solutions that allow us to expand our discovery efforts. Our proprietary LUNAR® technology is intended to address the major hurdles in RNA drug development, namely the effective and safe delivery of RNA therapeutics to disease-relevant target tissues. We believe the versatility of our platform to target multiple tissues, its compatibility with various nucleic acid therapeutics, and our expertise in developing scalable manufacturing processes can allow us to deliver on the next generation of nucleic acid medicines.

Business Updates

Updates on Vaccine Program Collaboration with CSL Seqirus

In November 2022, we entered into a Collaboration and License Agreement (the (as amended, the "CSL Collaboration Agreement") with Seqirus, Inc. ("CSL Seqirus"), a part of CSL Limited, and one of the world's leading influenza vaccine providers, for global exclusive rights to research, develop, manufacture and commercialize self-amplifying mRNA vaccines against COVID-19, influenza and three other respiratory infectious diseases and global non-exclusive rights to pandemic pathogens. The CSL Collaboration Agreement became effective on December 8, 2022. The collaboration combines CSL Seqirus' established global vaccine commercial and manufacturing infrastructure with Arcturus' manufacturing expertise and innovative STARR® self-amplifying mRNA vaccine and LUNAR® delivery platform technologies. Under the framework of our collaboration with CSL Seqirus, we continue the development of the COVID-19 vaccine to establish a differentiated platform and address routine recommendations for periodic vaccine composition updates in a timely manner. On August 10, 2023, we entered into an amendment to In November 2023, ARCT-154, our self-amplifying RNA (sa-mRNA) vaccine, received marketing authorization approval from the CSL Collaboration Agreement, pursuant to which CSL Seqirus agreed to make a $17.5 million milestone payment related to a development milestone Japanese Ministry of Health, Labour and Welfare for the LUNAR-FLU program under the collaboration. We plan to initiate a Phase 1 clinical study with a candidate influenza vaccine during the fourth quarter of 2023 use as a part of this collaboration program. primary immunization and booster in Japan. The approval was based on positive clinical data from several ARCT-154 studies, including the pivotal 19,000 subject efficacy, safety and immunogenicity study performed in Vietnam as well as the pivotal Phase 3 booster study in

Japan. The European Medicines Agency (EMA) is currently reviewing a marketing authorization application for ARCT-154. The review procedure started on August 17, 2023.

Key Updates on Our COVID Collaboration Program Updates

Pursuant to a third party study agreement executed Pivotal Phase 3 Non-Inferiority Study of ARCT-154 in December 2022 with Meiji Seika Pharma Co., Ltd., a subsidiary of Japan

Meiji Holdings Co., Ltd. ("Meiji"), sponsored a Japanese leader in the area of infectious disease, a randomized, multicenter, Phase 3, clinical trial of ARCT-154 was initiated in Japan by Meiji observer-blind, active-controlled comparative study to evaluate the safety and immunogenicity of a booster shot dose of ARCT-154 and to evaluate the non-inferiority and superiority of ARCT-154 as a booster. over COMIRNATY (Monovalent, Original strain). The trial study targeted a total of 780 adult participants, with half in the ARCT-154

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group and half in a comparator group, (Comirnaty®, Pfizer-BioNTech), and completed enrollment with 828 participants in February 2023. The interim As previously announced, the study met all primary and secondary immunogenicity endpoints, including a secondary pre-defined superiority assessment over Comirnaty (Omicron BA.4/5 strain). Overall, the safety and immunogenicity results of the study support the favorable benefit/risk profile of the ARCT-154 vaccine when administered as a booster dose in adult individuals who previously received other mRNA COVID-19 vaccines.

On February 1, 2024, the journal Lancet Infectious Diseases published the article 'Persistence of immune responses of a self-amplifying RNA COVID-19 vaccine (ARCT154) versus BNT162b2' (https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(24)00060-4/fulltext), with a 6-month follow-up results from this study demonstrated immunological non-inferiority and superiority study. These additional data demonstrate the extended persistence of neutralizing antibodies after ARCT-154 over the compared with conventional mRNA vaccine as measured in the clinical setting, indicating longer-lasting immunity and implying a longer duration of protection by neutralizing antibodies against ancestral SARS-CoV-2 strain and Omicron BA.4/5 subvariant, which was dominated ARCT-154.

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during the study period.In September 2023, we achieved a development milestone related to the completion of the first GMP batch manufacture of drug product in a multi-dose vial for clinical studies in the SARS-CoV-2 field.

On July 13, 2023, an article with the study results titled "Booster dose of self-amplifying SARS-CoV-2 RNA vaccine vs. mRNA vaccine: a Phase 3 comparison Study of ARCT-154 with Comirnaty" was posted on medRxiv.org at https://www.medrxiv.org/content/10.1101/2023.07.13.23292597v1. Following the completion Bivalent Version of the peer review by Lancet Infectious Diseases COVID-19 Vaccine Candidate in October 2023, the journal accepted the manuscript,

which should be published by the end of the year. In August 2023, we submitted the primary manuscript with efficacy, immunogenicity and safety results of the pivotal Phase 1/2/3 clinical study of ARCT-154 in Vietnam that completed dosing of over 19,000 participants in 2022. The preprint of this article is available on https://doi.org/10.21203/rs.3.rs-3329097/v1. The peer review of the manuscript is ongoing by Nature Communications. Japan

On August 7, 2023, we announced that Phase 1/2 clinical trial data demonstrated one-year durability of immune response following ARCT-154 booster vaccine administration as measured using validated microneutralization (MNT) assays. The geometric mean fold rise (GMFR) in neutralizing antibodies remained greater than 10-fold above baseline for one year across a panel of SARS-CoV-2 variants, including ancestral strain with the D614G mutation, Beta (B.1.351), Delta (B.1.617.2), and Omicron (BA.1, BA.2 and BA.4/5), for participants receiving ARCT-154 booster. The results of this study were presented as a poster at the 9th Influenza Conference of the European Scientific Working Group on Influenza (ESWI) in Valencia, Spain.

Geometric mean fold rise (GMFR) of neutralizing antibodies against SARS-CoV-2 variants (versus pre-booster levels) after ARCT-154 booster vaccination measured by validated psuedoviral microneutralization assays (N=12). Error bars represent the 95% CI. Participants who received any COVID-19 vaccines or had laboratory-confirmed SARS-CoV-2 infection during the follow-up period were excluded from immunogenicity analysis at sampling times after the event.

On November 1, 2023, at the 11th mRNA conference in Berlin, we presented the preliminary 6-month durability data of immune response of our COVID-19 vaccine candidate, ARCT-154, compared to the licensed conventional mRNA vaccine (Comirnaty) from the Phase 3 study in Japan that completed enrollment in February 2023 is now available. The results indicate a

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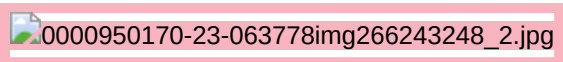
superior antibody persistence of our COVID-19 vaccine over the comparator, as measured by pseudoviral neutralization assays with ancestral SARS-CoV-2 strain and Omicron BA.4/5 subvariant.



On September 29, 2023, CSL's Japanese distribution partner, Meiji initiated a an additional Phase 3 clinical study with a bivalent version of our COVID-19 vaccine candidate (ancestral strain, ARCT-154 and Omicron BA.4/5) to further support immunogenicity and safety of data for our self-amplifying mRNA platform, and which may facilitate the timely release of future seasonal updates of our COVID-19 vaccine against evolving variants of concern. On March 19, 2024, Meiji announced that the bivalent vaccine met the primary endpoint (non-inferiority) in the study. The study is enrolling enrolled 930 healthy adults and individuals with comorbidities, who previously received 2-4 three to five doses of mRNA COVID-19 vaccines, including the last booster at least 3 three months prior to recruitment, and has exceeded the targeted enrollment of 850 participants ahead of schedule. recruitment. The study will compare compares the investigational vaccine ARCT-2301 (ARCT-2301) and COMIRNATY (ancestral strain and BA.4/5), for evaluation of to evaluate safety and immunogenicity between observer-blind groups. Preliminary results Both the geometric mean titer (GMT) ratio and seroresponse rate (SRR)

difference of his study are expected by neutralizing antibodies against SARS-CoV-2 (Omicron strain BA.4/5) met non-inferiority criteria. In addition, the end superiority of Q1 2024. ARCT-2301 to

COMIRNATY (BA.4/5) was confirmed for both SARS-CoV-2 (Omicron strain BA.4/5 and Wuhan strain). There were no causally-associated severe or serious adverse events with ARCT-2301.

The results of this study of the bivalent version of our COVID-19 vaccine candidate are were not required for approval of ARCT-154 in Japan but will facilitate the timely release of future seasonal updates of the COVID-19 vaccine without vaccine.

Figure: Geometric mean titers (GMT) of surrogate neutralizing antibodies at Days 1 (baseline) and 29, and geometric mean-fold rises (GMFR) in titers from Day 1 to Day 29; B) GMT Ratio; C) seroresponse rates (SRR) at Day 29; D) SRR Difference – Study ARCT-2301-J01. Note: GMT – Geometric Mean Titer; SRR – seroresponse rate. All values are from the need Per Protocol Subset 1 (PPS-1) and are shown with 95% confidence intervals in parentheses. Solid circles (●) represent the Wuhan variant, open circles (○) represent the Omicron BA.4/5 variant, and open squares (□) represent the Omicron XBB.1.5 variant. Vertical lines represent the threshold for additional clinical data. achieving the non-inferiority and superiority comparisons of ARCT-154 to Comirnaty.

On September 5, 2023 Bivalent ARCT-2301, when administered intramuscularly as a booster dose in subjects who had received three to five doses of authorized mRNA COVID-19 vaccines at least three months before the recruitment, demonstrated immunological superiority over the comparator vaccine (Comirnaty® bivalent: Wuhan strain/Omicron strain BA.4/5), we announced that as measured by GMT ratios and seroresponse rates differences for both vaccine strains (prototype Wuhan strain and Omicron BA.4/65 variant). In addition, ARCT-2301 induced a higher immune response against the European Medicines Agency (EMA) validated epidemiologically dominant Omicron XBB.1.5 variant.

Phase 3 Study in Southern Hemisphere of Monovalent XBB1.5 COVID-19 Vaccine Candidate

In March 2024, Arcturus and CSL Seqirus initiated a Phase 3 pivotal study with the marketing authorization application (MAA) ARCT-2303 candidate vaccine containing the XBB1.5 Omicron variant. The purpose of this study is to generate additional immunogenicity and safety data for ARCT-154, a next generation mRNA the recently recommended vaccine for active immunization composition and support product licensure in the United States. In addition, the study will assess the

co-administration of the ARCT-2303 vaccine with the age-appropriate seasonal influenza vaccines. Overall, approximately 1,680 young and older adults are planned to prevent COVID-19 caused by SARS-CoV-2 be recruited in individuals 18 years of age the study in Australia, Costa Rica, Honduras and older. the Philippines.

Flu Collaboration Program Updates

On August 10, 2023, we entered into an amendment LUNAR-qsFLU (Quadrivalent Seasonal Influenza)

Our LUNAR-qsFLU (qs; quadrivalent seasonal) program, now exclusively licensed to the CSL Collaboration Agreement, pursuant to which CSL Seqirus, agreed has the objective of producing a safe and effective seasonal influenza vaccine candidate with significant advantages over the traditional egg-based inactivated quadrivalent vaccine. Inaccurate predictions of circulating influenza strains as well as mutations due to make adaptation in egg-grown vaccines can substantially reduce efficacy on a $17.5 million milestone payment related year-to-year basis. We believe the ability of mRNA platforms to a development milestone for nimbly adapt to new viral strains should help improve efficacy. In addition, we do not expect mRNA vaccines to face the LUNAR-FLU program under the collaboration. We received this milestone payment during the quarter ended September 30 2023 and the Company intends challenge from mutations common to use the egg-grown vaccines.

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proceeds from this milestone payment LUNAR-qsFLU has been designed to fund take advantage of our expertise in both LUNAR lipid delivery systems and our STARR self-amplifying mRNA technology. This platform has been shown to deliver effective protection against COVID-19 and has been optimized to elicit robust immunogenicity with acceptable reactogenicity at a lower dose than conventional mRNA vaccines with the Company's development activities under the LUNAR-FLU program, including the initiation objective of Phase 1 clinical study.

We have creating a highly effective influenza vaccine for use in general and high-risk populations. Working with CSL Seqirus, we generated a comprehensive non-clinical data package to support the initiation of the Phase 1 clinical trial with a novel influenza mRNA vaccine candidate. All necessary approvals A Phase 1 dose-finding safety and immunogenicity study was initiated in January 2024 in Australia. As of May 1, 2024, 84 healthy young adults were recruited in the study and received one of four dose levels of the study vaccine or a licensed influenza vaccine. The recruitment of older adults is ongoing. Additional preclinical mouse immunogenicity studies and nonclinical safety studies have been completed that will help enable the Phase 2 clinical trial.

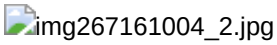
Pandemic Influenza Program

Our LUNAR-pandFLU program continues to initiate progress under the award from the Biomedical Advanced Research and Development Authority ("BARDA") that we obtained in 2022. The program includes all non-clinical, manufacturing, and regulatory support to advance a vaccine to protect against disease caused by H5N1 highly-pathogenic avian influenza. A pre-IND meeting was granted and Written Response Only (WRO) was received for integration into future

development plans. Nonclinical safety studies have been completed that will enable the Phase 1 study have been received. clinical trial. Enrollment for a Phase 1 clinical trial designed to evaluate the safety and immunogenicity of ARCT-2304 (LUNAR-pandFLU candidate vaccine) is expected to begin before the end of 2024.

Key Updates on Arcturus-Owned mRNA Therapeutic Development Candidates

The following chart represents our current pipeline of Arcturus-Owned Arcturus-owned mRNA Therapeutic Candidates: therapeutic candidates:



- LUNAR-OTC/ARCT-810 - We remain committed to our rare disease program for ornithine transcarbamylase (OTC) deficiency.
  - A Phase 1b study in stable OTC-deficient adults is being conducted completed dosing in the United States. States in August 2023. The trial is was designed to assess safety, tolerability and pharmacokinetics of single dose of ARCT-810, as well as various exploratory biomarkers of drug activity. The Phase 1b study has completed enrollment was a single ascending dose, placebo-controlled study that enrolled 16 adults with mild OTCD. ARCT-810 was generally safe and dosing well tolerated at doses ranging from 0.1-0.5mg/kg and no severe adverse events were observed. Sporadic infusion-related reactions (IRRs) could be managed with symptomatic treatment and appear to be less frequent with slower infusion rates. In plasma, ARCT-810 mRN could be detected up to 4 weeks, while ionizable lipid was no longer measurable after 48 hours, indicating rap degradation of all four cohorts (N = 16 subjects). We expect the final database lock lipid nanoparticle that was utilized to occur in the fourth quarter of 2023. deliver ARCT-810 mRNA.
  - A Phase 2 multiple-dose study of ARCT-810 in OTC-deficient adolescents and adults initiated dosing in December 2022 and plans to enroll approximately 24 participants in 2 two dose cohorts. The study has been approved by the regulatory authorities is being conducted in the UK and several other countries in Europe. W are taking various actions the European Union. Efforts to address the continued challenging enrollment rate ir Europe,

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by adding study sites and patient services to eliminate barriers to participation.

- In June 2023, participation, appear to be effective and the US Food and Drug Administration (the “FDA”) gran Fast Track Designation study continues to ARCT-810. Fast Track Designation is designed to facilitate development and expedite review of new therapeutics intended to treat serious or life-threatening conditions t demonstrate the potential to address important unmet medical needs.
- In June 2023, ARCT-810 received Rare Pediatric Disease Designation from the FDA. Such designation is designed to recognize rare pediatric diseases in which the serious or life-threatening manifestations primarily

affect patients from birth to 18 years of age. Due to such designation, if ARCT-810 achieves approval for a pediatric indication in the original rare pediatric disease product application in the United States, Arcturus (or sponsor of ARCT-810) will receive a voucher for priority review of a subsequent marketing application for a different product. enroll patients.

- LUNAR-CF/ARCT-032 – Our program for cystic fibrosis is being supported in part by the Cystic Fibrosis Foundatio
  - Results from preclinical studies demonstrate robust protein expression In 2023 we initiated and successfully achieved the recruitment target in respiratory epithelium treated with LUNAR-mRNA in vitro and in vivo. Furth CF human bronchial epithelial cells treated with ARCT-032 in vitro demonstrate restoration of CFTR activity.
  - A CTA was filed in December 2022 for the first-in-human study, and we completed dosing of the a Phase 1 si ascending dosing dose study of ARCT-032 (LUNAR-CF), our mRNA therapeutic candidate for cystic fibrosis (CF), in 32 healthy participants (eight subjects in each of four dose cohorts).
  - In August 2023 we received regulatory approval of a protocol amendment to allow the transition to a Phase 1 clinical study of ARCT-032 in up to eight adults with CF, with each participant receiving two administrations of ARCT-032. We initiated
  - The first participant with CF in the Phase 1b enrollment in October 2023, with dosing study part enrolled and completed two administrations of first participant scheduled ARCT-032 in November 2023. 2023, and we are continuing enrollment.
  - In September 25, 2023 February 2024, the European Commission (EC), we entered into an amendment base on a positive opinion issued by the European Medicines Agency (EMA), granted Orphan Medicinal Product Designation for ARCT-032 to our Development Program Letter Agreement with treat CF. ARCT-032 was gran Orphan Drug Designation by the Cystic Fibrosis Foundation Agreement. Please see “Updates on Collaborati Agreements” – “Cystic Fibrosis Foundation Agreement”.

  - On October 25, 2023, ARCT-032 received Rare Pediatric Disease Designation from the FDA. Such designati is designed to recognize rare pediatric diseases FDA in which the serious or life-threatening manifestations primarily affect patients from birth to 18 years of age. Due to such designation, if ARCT-032 achieves approva for a pediatric indication in the original rare pediatric disease product application in the United States, Arcturu (or the sponsor of ARCT-032) will receive a voucher for priority review of a subsequent marketing application a different product.
  - In November 2023, we presented new data showing proof of activity in vivo (G551D CF Ferret model) at the North American Cystic Fibrosis Conference. The ferrets in the study require continuous treatment with the CF modulator ivacaftor to prevent disease progression. A single administration of ARCT-032 showed successful transfection of airway epithelial cells and restoration of mucociliary clearance of ARCT-032 above the level maintained with ivacaftor. 2023.

Updates on Collaboration Agreements

CSL Collaboration Agreement.

Please see “Business Updates” – “Updates on Vaccine Program”.

Cystic Fibrosis Foundation Agreement

On May 16, 2017, pursuant to a Development Program Letter Agreement (as amended, the "CFF Agreement") with the Cystic Fibrosis Foundation ("CFF"), CFF agreed to award us funding for a development program to identify lead CFTR mRNA sequences and LUNAR® formulations, demonstrate tolerability of LUNAR® CFTR mRNA, and demonstrate translatability of aerosolized LUNAR®. The award includes a grant of rights to CFF know-how to assist us to research, develop, commercialize, make or otherwise exploit a product. If the award results in a successful commercialized product, we will pay CFF (i) royalties on sales of the product up to a maximum of a single-digit multiple of the total award amount actually paid to us by CFF, and (ii) thereafter, a single-digit percentage of annual net sales. Further, in the event of a license, sale or other transfer of the product or our development program technology (including a change of control transaction), we will pay CFF a percentage of such license, sale or transfer payments actually received by us or our shareholders (subject to a royalty cap). On August 1, 2019, In March 2024, we entered into an amendment Amendment Number Two to Collaboration and License Agreement to reflect updates to the CFF Agreement. Pursuant to development program and other adjustments consistent with our prior disclosures regarding the amendment, Collaboration and License Agreement ("Amendment Number Two"). Amendment Number Two, among other things, adjusts (i) CFF will increase the amount it will award to advance LUNAR-CF, (ii) we will provide a certain amount of matching funds for remaining budgeted costs, and (iii) the related disbursement schedule from CFF to us was modified such that (a) a disbursement was made upon execution of the amendment, (b) an agreed upon amount will be disbursed to us within thirty days of the first day of each of January, April, July and October 2020, and (c) the last payment will be disbursed upon us invoicing CFF to meet good manufacturing practices and submitting an IND application. In January 2022, the parties signed an additional amendment for CFF to fund the development of a CF ferret model plans for application in the certain product candidates, (ii) various development of ARCT-032, our LUNAR-CF candidate.

On September 25, 2023, we entered into an additional amendment (the "Fourth Amendment") milestones related to the CFF Agreement, pursuant to which we and CFF agreed to: (a) increase the Amount of Award (as defined in the CFF Agreement and applicable amendment) from CFF to advance LUNAR-CF by up to $9 million (for a total to date of up to approximately $25 million), and required Arcturus to provide $15 million in matching funds for remaining budgeted costs; (b) modify the existing rates and caps on royalties due to CFF under the CFF Agreement, including the addition of an option for Arcturus to reduce the royalty rate through a one-time payment; (c) modify the calculation of payments from Arcturus to CFF in the event of certain dispositions or licensing of cystic fibrosis or other pulmonary assets or of a change of control of Arcturus; and (d) make corresponding changes to exhibits, definitions and other such product candidates, (iii) provisions of the CFF Agreement.

CureVac

On January 1, 2018, we entered into a Development and Option CSL Collaboration Agreement with CureVac, which was amended on May 3, 2018, restated on September 28, 2018 and amended on July 24, 2019 (as amended and restated, the "Development and Option Agreement"). Under the terms related to specific royalty payments, (iii) provisions of the Development CSL Collaboration Agreement related to distributors, and Option Agreement, CureVac and Arcturus agreed (iv) proprietary payment calculations related to conduct joint preclinical development programs and we granted CureVac a license to develop and commercialize certain products incorporating certain of our technology (the "Arcturus LMD

Technology") and CureVac technology. CureVac did not exercise its option to extend the term prior to its expiration, and the Development and Option Agreement expired as of July 24, 2023.

Updates on ARCALIS Joint Venture

On August 14, 2023, we announced that ARCALIS Inc. (ARCALIS), our manufacturing joint venture in Japan to support the production of mRNA vaccines and therapeutics, had been awarded up to $115 million in two separate grants from the Japanese government. We anticipate that these grants will be used to fund the construction of a factory and the purchase of capital equipment to support current Good Manufacturing Practice (cGMP) production of mRNA drug substance and mRNA drug product operations.

On October 4, 2023, we announced that ARCALIS was selected by the Japanese Ministry of Economy, Trade and Industry to receive additional financial support to construct a DNA template manufacturing facility along with new state-of-the-art equipment. DNA plasmid generated at this facility would be used as key starting material in the manufacture of mRNA drug substance at

ARCALIS' neighboring mRNA drug substance facility, which was completed in July 2023. To date, approximately $165 million has been awarded to ARCALIS by the Japanese government, subject to certain terms and conditions, to build mRNA Drug Substance, mRNA Drug Product manufacturing capabilities and to construct a DNA template manufacturing facility. As of November 6, 2023, our ownership in ARCALIS is 36.7%. foregoing.

Updates on Research and Platform Activities

We continue to conduct exploratory platform development activities, including the evaluation of genome editing, and new targeting approaches, where our LUNAR® and STARR® platforms could potentially be useful for identification and development of additional products for our portfolio.

Discovery Programs – Vaccine Programs (Lyme Disease and Gonorrhea)

Based on the clinical and regulatory validation of LUNAR and STARR technologies provided by the approval of ARCT-154, our next-generation vaccine for COVID-19, we have initiated new vaccine discovery programs for Lyme disease and gonorrhea. The new discovery programs rely on the evidence of superior immunogenicity, durability, and breadth of immune response compared to conventional mRNA vaccines, as observed in the COVID-19 program.

Lyme disease is a bacterial infection and is the most common vector-borne disease in the United States. Infection can spread to joints, the heart and the nervous system. Gonorrhea is a sexually transmitted disease (STD) that can infect the mucous membranes of the reproductive tract. It is the second most commonly reported bacterial sexually transmitted infection in the United States. We selected these diseases based on high unmet medical needs, good understanding of the path forward in vaccine target selection, and demonstration of proof of concept, as well as platform advantages that may be translated in a favorable vaccine product.

Updates on Supply and Manufacturing

We have built a global manufacturing footprint with our partners, including Aldevron, Catalent, Recipharm, Polymun and ARCALIS. With such collaborations we have established an Integrated Global Supply Chain Network with our primary and secondary sourcing contract development & manufacturing organizations (CDMOs) based in the United States, EU and Asia for producing critical raw materials, drug substance, and packaged finished product. As the market for COVID vaccines shifts from multi-dose vial formats to lower and single-dose vial formats, we continue, with our collaborator CSL Seqirus, to evaluate and advance manufacturing process and capabilities and technology transfers, and prepare for stockpiling and commercialization of COVID vaccines.

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, 2022 December 31, 2023. 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.

Revenue

We enter into arrangements with pharmaceutical and biotechnology partners and government agencies that may contain upfront payments, license fees for research and development arrangements, research and development funding, milestone payments, option exercise and exclusivity fees, royalties on future sales, consulting fees and payments for technology transfers. The following table summarizes our total revenues for the periods indicated:

	Three Months Ended September 30,		2022 to 2023	
(in thousands)	2023	2022	$ change	% change
Revenue	$ 45,140	$ 13,369	$ 31,771	*

** Greater than 100%*

	Three Months Ended March 31,		2023 to 2024	
(in thousands)	2024	2023	$ change	% change
Revenue	$ 38,012	$ 80,285	$ (42,273)	-52.7%

Revenue increased decreased by $31.8 million $42.3 million during the three months ended September 30, 2023 March 31, 2024 as compared to the three months ended September 30, 2022 March 31, 2023. The increase decrease

was primarily attributable to $45.2 million the CSL agreement as $78.2 million total revenue was recognized during the first quarter of 2023 upon the achievement of a conditional payment and multiple milestones, compared to $32.4 million total revenue recognized related to CSL during the first quarter of 2024, resulting in a decrease of $45.8 million. An additional decrease of $1.3 million resulted from the completion of two collaboration agreement and flu Phase I agreement with CSL Seqirus, as well as grant revenue recognized from the agreement with BARDA, which were both executed in the second half of 2022 with negligible revenue recognized during agreements by the third quarter of 2022. 2023. The increase total decrease was primarily offset by a decrease in revenue of $13.4 million related to decreased revenue recognized as a result of the termination of collaboration agreements with CureVac, UGX, Janssen and Vinbiocare.

(in thousands)	Nine Months Ended September 30,		2022 to 2023	
	2023	2022	$ change	% change
Revenue	$ 135,944	$ 45,706	$ 90,238	*

** Greater than 100%*

Revenue increased by $90.2 million during the nine months ended September 30, 2023 as compared to the nine months ended September 30, 2022. The increase was attributable to an increase in revenue of $133.0 million primarily related to the collaboration agreement with CSL Seqirus and the grant agreement with BARDA which were both executed in the second half of 2022. The increase was primarily offset by decreases in revenue of the following: (i) $27.2 million related to the termination of the agreement

with Vinbiocare, (ii) $12.5 million $4.9 million related to the agreement with the Israeli Ministry of Health, (iii) $1.9 million related to the termination of the agreement with Janssen and (iv) $1.0 million related to the termination of the agreement with UGX. BARDA.

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

(in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	2022 to 2023 $ change	2022 to 2023 % change	Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	2022 to 2023 $ change	2022 to 2023 % change	Three Months Ended March 31, 2024	Three Months Ended March 31, 2023	2023 to 2024 $ change	2023 to 2024 % change

Operating expenses:												
Research and development, net	$ 51,077	$ 37,688	$ 13,389	35.5%	$ 155,513	$ 120,770	$ 34,743	28.8%	$	53,573	$ 51,768	$ 1,805	3.5 %
General and administrative	13,377	12,488	889	7.1%	40,364	34,211	6,153	18.0%		14,851	13,762	1,089	7.9 %
Total	$ 64,454	$ 50,176	$ 14,278	28.5%	$ 195,877	$ 154,981	$ 40,896	26.4%	$	68,424	$ 65,530	$ 2,894	4.4 %

Research and Development Expenses, net

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

Three Months Ended September 30,	2022 to 2023	Nine Months Ended September 30,	2022 to 2023	Three Months Ended March 31,	2023 to 2024

(in thousands)	2023	2022	$ change	% change	2023	2022	$ change	% change	2024	2023	$ change	% change
External pipeline development expenses:												
LUNAR-COVID, net	$ 24,892	$ 16,018	$ 8,874	55.4 %	$ 71,501	$ 60,774	$ 10,727	17.7 %	$ 20,730	$ 22,828	$ (2,098)	-9.2 %
LUNAR-OTC, net	2,001	2,063	(62)	-3.0 %	7,520	6,471	1,049	16.2 %	1,383	3,319	(1,936)	-58.3 %
BARDA									3,235	156	3,079	*
Early-stage programs	3,256	2,801	455	*	11,594	7,031	4,563	*	7,362	4,714	2,648	56.2 %
Discovery technologies	4,662	3,680	982	*	16,266	8,287	7,979	*	1,190	4,751	(3,561)	-75.0 %

External platform development expenses:												
Personnel related expenses	13,402	11,406	1,996	17.5%	40,263	31,862	8,401	26.4%	15,518	13,271	2,247	16.9%
Facilities and equipment expenses	2,782	2,163	619	28.6%	8,436	6,430	2,006	31.2%	4,155	2,729	1,426	52.3%
Total research and development expenses, net	$ 17,053	$ 13,569	$ 3,484	25.7%	$ 50,205	$ 40,207	$ 9,998	24.9%	$ 53,573	$ 51,768	$ 1,805	3.5%

** Greater than 100%*

Our research and development expenses consist primarily of external manufacturing costs, in-vivo research studies and clinical trials performed by contract research organizations, clinical and regulatory consultants, personnel related expenses, facility related expenses and laboratory supplies related to conducting research and development activities. Research and development expenses were $51.1 million $53.6 million for the three months ended September 30, 2023 March 31, 2024, compared with $37.7 million $51.8 million in the comparable period last year, primarily reflecting increased clinical research and manufacturing costs of $11.6 million and an increase of $2.0 million in personnel BARDA related costs, an increase in travel and consulting expenses of $0.2 million $3.0 million, an increase increased early-stage programs expenses of $0.7 million in $2.7 million, increased personnel expenses of $2.2 million and increased facilities expense and equipment expenses of $1.4 million. The increases were offset by a $3.5 million decrease of contra research and development in discovery technologies expenses, recognized of $1.1 million. Research and development a $2.1 million decrease in COVID expenses were $155.5 million for the nine months ended September 30, 2023, compared with $120.8 million in the comparable period last year, primarily reflecting increased caused by fewer contract manufacturing costs of $27.8 million, an increase of $5.7 million in personnel related costs, an increase in consulting expenses of $1.4 million, an

increase of $2.1million in facilities expense and a $1.9 million decrease of contra research and development expenses recognized of $1.6 million. The increase was primarily offset by a decrease of clinical-related expenses of $3.9 million. in OTC expenses. We expect that our research and development efforts and associated costs will increase and continue to be substantial over the next several years as our pipeline progresses.

Early-stage programs represent programs that are in the pre-clinical or Phase 1 clinical stage and may be partnered or unpartnered, including the LUNAR-CF and LUNAR-FLU programs. Discovery technologies represent our efforts to expand our product pipeline and are primarily related to pre-partnered studies and new capabilities assessment. For some of our programs, the activities are part of our collaborative and other relationships, and the expenses may be partially offset with funds that have been awarded to the Company. The expenses for early-stage programs and discovery technologies primarily consist of external manufacturing costs, lab supplies, equipment, and consulting and professional fees. Both early stage early-stage programs and discovery technologies expenses are expected to steadily increase over the coming years.

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Personnel related expenses primarily consist of employee salaries and benefits, share-based compensation and consultants. Although such expenses increased during 2023 2024 as compared to 2022, 2023, we expect that they will not increase over the next twelve months.

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Facilities During the three months ended March 31, 2024, facilities and equipment expenses increased during the nine months ended September 30, 2023 as a result of increased primarily due to higher rent and associated costs related costs. Additionally, we recognized a $0.8 million lease impairment loss during the same period due to a new facility we took possession the abandonment of in April 2022. one of our facilities. Facilities and equipment expenses are not expected to increase during the next twelve months.

General and Administrative Expenses

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

General and administrative expenses were $14.9 million for the three months ended March 31, 2024 compared with $13.8 million in the comparable period last year. The increase in expenses resulted primarily from increased personnel expenses due to increased salaries, increased travel and consulting expenses as well as escalated rent expense associated with our facilities. The Company does not expect that general and administrative expenses will increase on a yearly basis from the current quarter September 30, 2023 expense trend.

General and administrative expenses were $13.4 million and $40.4 million for the three and nine months ended September 30, 2023, respectively, compared with $12.5 million and $34.2 million in the comparable periods last year. These increases in expenses resulted primarily from increased personnel expenses due to increased headcount and salaries, increased travel and consulting expenses as well as increased rent expense associated with the new facility. The Company does not expect that general and administrative expenses will increase on a yearly basis from the current quarter September 30, 2023 March 31, 2024 expense trend.

Finance income (expense), net

(in thousands)	Three Months Ended September 30, 2023	Three Months Ended September 30, 2022	2022 to 2023 $ change	2022 to 2023 % change	Nine Months Ended September 30, 2023	Nine Months Ended September 30, 2022	2022 to 2023 $ change	2022 to 2023 % change	Three Months Ended March 31, 2024	Three Months Ended March 31, 2023	2023 to 2024 $ change	2023 to 2024 % change
Interest income	$ 14,005	$ 4,475	$ 9,530	*	$ 40,476	$ 7,670	$ 32,806	*	$ 4,016	$ 3,220	$ 796	24.7%
Interest expense	(26,045)	(7,474)	(18,571)	*	(63,148)	(21,444)	(41,704)	*	—	(743)	743	*
Total	$ (12,040)	$ (2,999)	$ (9,041)	*	$ (22,672)	$ (13,774)	$ (8,898)	*	$ 4,016	$ 2,477	$ 1,539	62.1%

** Greater than 100%*

Interest income is generated on cash and cash equivalents. The increase in interest income for the three and nine month periods months ended September 30, 2023 March 31, 2024 as compared to the comparable periods period last year was primarily the result of increased interest rates and an increased cash balance due to large cash amounts received under the CSL Seqirus agreement. shifting money within accounts. Interest expense decreased as no interest expense was incurred during the second and third quarters first quarter of 2023 related to 2024. Interest expense during the extinguishment of first quarter ended March 31, 2023 was incurred in conjunction with the Western Alliance Agreement and the forgiveness of the Singapore Loan, during the first quarter both of 2023. which have since been terminated.

Other income and expense

(in thousands)	Three Months Ended September 30, 2023	2022	2022 to 2023 $ change	2022 to 2023 % change	Nine Months Ended September 30, 2023	2022	2022 to 2023 $ change	2022 to 2023 % change	Three Months Ended March 31, 2024	2023	2023 to 2024 $ change	2023 to 2024 % change
Loss from equity-method investment	$ —	$ —	$ —	0%	$ —	$ (5)	$ 5	100%				
Gain (loss) from foreign currency	4	2	8)	8%	5)	7	2)	*	(53)	(328)	275	-83.8%

Gain on debt extinguishment	—	—	—	0.0%	33,953	—	33,953	100.0%	—	33,953	(33,953)	*
		1,898	(1,865)	-99.7%	33,773	2,727	31,046					
Total	$ 4	$ 2	$ (8)	-8%	$ 8	$ 2	$ 6	*	$ (53)	$ 33,625	$ (33,678)	*

** Greater than 100%*

Other income and expense items primarily relate to gains and losses from equity-method investments and foreign currency transactions. Additionally, we recorded a gain on debt extinguishment related to the Singapore Loan of $34.0 million during the first quarter of 2023 as a result of the Singapore Loan being forgiven.

We recorded no gain or loss in the three and nine months ended September 30, 2023, compared with no gain or loss in the three months ended September 30, 2023 and $0.5 million losses in the nine months ended September 30, 2022 in connection with our investment in GRI Bio, Inc. (formerly Vallon Pharmaceuticals, Inc.)

The changes in gain (loss) from foreign currency for the three and nine months ended September 30, 2023 compared to the three and nine months ended September 30, 2022 were primarily attributable to the Singapore Loan being forgiven during the first quarter of 2023. The remaining amounts recorded as gain (loss) from foreign currency relate to transactions made in foreign currencies.

Off-balance sheet arrangements

Through September 30, 2023 March 31, 2024, 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.

Liquidity and Capital Resources

From the Company's inception through the quarter ended September 30, 2023 March 31, 2024, the Company has funded its operations principally with the proceeds from the sale of capital stock, long-term debt and revenues earned

through collaboration agreements and government contracts. We received Through the first quarter of 2024, we have achieved a $200.0 million total of approximately $420.1 million in upfront payment payments and milestones from CSL Seqirus, during including a milestone of $19.2 million achieved in the fourth current quarter with payment anticipated in the second quarter of 2022. Additionally, in the three months ended June 30, 2023, we received $90.0 million in milestone payments and $23.6 million for the manufacturing and supply of ARCT-154 from CSL Seqirus. We expect to receive future payments from CSL Seqirus primarily by meeting future milestones related to the CSL Collaboration Agreement. 2024. At September 30, 2023 March 31, 2024, we had $311.9 million $345.3 million in unrestricted cash and cash equivalents which includes amounts borrowed of $20.0 million from the Wells Fargo Credit Agreement. Balances outstanding under the line of credit will vary from quarter to quarter as cash flow from collaborations fluctuate. and restricted cash.

CSL Seqirus, Inc. Collaboration and License Agreement

We entered into the CSL Collaboration Agreement with CSL Seqirus, a part of CSL Limited, one of the world's leading influenza vaccine providers, for the global exclusive rights to research, develop, manufacture and commercialize mRNA vaccines.

CSL Seqirus received exclusive global rights to our technology for vaccines against SARS-CoV-2 (COVID-19), influenza and three other respiratory infectious diseases with and non-exclusive rights to pandemic pathogens. We received an up-front payment of $200.0 million during the fourth quarter of 2022. We will be eligible to receive development milestones totaling more than $1.3 billion if all products are registered in the licensed fields. We will also be entitled to receive up to $3.0 billion in commercial milestones based on "net sales" of vaccines in the various fields.

In addition, we are entitled to receive a 40% share of net profits from COVID-19 vaccine sales and up to low double-digit royalties of annual net sales for vaccines against influenza and the other three specified infectious disease pathogens, as well as royalties on revenues from vaccines that may be developed for pandemic preparedness.

The CSL Collaboration Agreement sets forth how CSL Seqirus and us we shall collaborate to research and develop vaccine candidates. In the COVID-19 field, we will lead activities for certain regulatory filings for ARCT-154 in the US and Europe and for research and development activities of a next-generation COVID vaccine candidate. CSL Seqirus will lead and be responsible for all other research and development in COVID-19, influenza and the other fields.

Wells Fargo Credit Agreement

On April 21, 2023, the Company's wholly-owned subsidiary, Arcturus Therapeutics, Inc. entered into a credit agreement with Wells Fargo Bank, National Association ("Wells Fargo") whereby Wells Fargo agreed to make a $50.0 million revolving credit line available to the Company (the "Wells Fargo Loan") and each Wells Fargo Loan evidenced by a revolving line of credit note (the "Note").

Borrowings under the agreement will bear interest at a rate of 1.00% above either the Daily Simple SOFR or Term SOFR (as such terms are defined in the Wells Fargo Note), with "SOFR" being the rate per annum equal to the secured overnight financing rate as administered by the Federal Reserve Bank of New York. If an Event of Default (as defined in the credit agreement) occurs, then all Wells Fargo Loans shall bear interest at a rate equal to 2.00% above the interest rate applicable immediately prior to the occurrence of the Event of Default. As of March 31, 2024, no borrowings were made against the Wells Fargo Note.

The term of the agreement is two years, with an option for one-year renewals subject to Wells Fargo approval and the Company furnishing to Wells Fargo a non-refundable commitment fee equal to 0.25% of the Wells Fargo Loan amount for each such renewal. There is no penalty for terminating the agreement. There is no penalty for terminating the facility prior to the maturity date of the Wells Fargo Note. As collateral, the Company has agreed to pledge $55.0 million in cash to be held at the Company's securities accounts with Wells Fargo Securities, LLC, an affiliate of Wells Fargo, pursuant to a security agreement. During the three months ended September 30, 2023, we drew down $20.0 million which was subsequently repaid in October 2023.

Grant from the Biomedical Advanced Research and Development Authority

On August 31, 2022, we entered into a cost reimbursement contract (the "BARDA Contract") with the Biomedical Advanced Research and Development Authority ("BARDA"), a division of the Office of the Assistant Secretary for Preparedness and Response (ASPR) within the U.S. Department of Health and Human Services (HHS) to support the development of a low-dose pandemic influenza candidate based on our proprietary self-amplifying messenger RNA-based vaccine platform. The BARDA Contract is to support our non-clinical and pre-clinical development, early-stage clinical development through Phase 1, and associated drug product

manufacturing, regulatory and quality-assurance activities over a period of three years. It provides for reimbursement by BARDA of our permitted costs up to $63.2 million.

Vinbiocare Agreement

During 2021, we entered into a technology license and technical support agreement and the framework drug substance supply agreement with Vinbiocare, a member of Vingroup Joint Stock Company (collectively, the "Vinbiocare License & Supply Agreements"), whereby we would provide technical expertise and support services to Vinbiocare to assist in the build out of an mRNA drug product manufacturing facility in Vietnam. We received an upfront payment in aggregate of $40.0 million as part of the Vinbiocare License and Supply Agreements. In October 2022, in association with the termination of the Vinbiocare License and Supply Agreements, we signed the Vinbiocare Support Agreement with Vinbiocare which continues Vinbiocare's clinical obligations and reserved a portion of the original $40.0 million upfront payment received from the License and Supply Agreements to be paid over the future periods.

The Vinbiocare Support Agreement requires us to pay to Vinbiocare certain limited payments, including upon the occurrence of specified events through the first quarter of 2025. Vinbiocare is also eligible to receive a single digit

percentage of amounts received by Arcturus on net sales, if any, of ARCT-154 (or next-generation COVID vaccine) up to a capped amount.

General Financial Resources

A portion of our current cash balance is expected to be utilized during fiscal year 2023 2024 to fund (i) the continued Phase 2 trial of ARCT-810, our LUNAR-OTC candidate, (ii) advances to our LUNAR-CF program in clinical trials, (iii) expenses incurred prior to customer payments under the CSL Collaboration Agreement and BARDA agreement and (iv) continued exploratory activities related to our platform and other general administrative activities.

Our future capital requirements are difficult to forecast and will depend on many factors that are out of our control. If we are unable to maintain sufficient financial resources, our business, financial condition and results of operations will be materially and adversely affected. There can be no assurance that we will be able to obtain additional needed financing on acceptable terms or at all. Additionally, equity or debt financings may have a dilutive effect on the holdings of our existing shareholders.

We expect to continue to incur additional losses in the long term, and we will need to execute on milestones within the CSL Collaboration Agreement, raise additional debt or equity financing or enter into additional partnerships to fund development. Our ability to transition to profitability is dependent on executing on milestones within the CSL Collaboration Agreement and identifying and developing successful mRNA drug and vaccine candidates. If we are not able to achieve planned milestones or incur costs in excess of our forecasts, we will need to reduce discretionary spending, discontinue the development of some or all of our programs, which will delay part of our development programs, all of which will have a material adverse effect on our ability to achieve our intended business objectives.

Funding Requirements

We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates, and begin commercialization of our products. As a result, we will require additional capital to fund our operations in order to support our long-term plans. We believe that our current cash position will be sufficient to meet our anticipated cash requirements through at least the next twelve months, assuming, among other things, no significant unforeseen expenses and continued funding from partners at anticipated levels. 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, liquidate our assets, file for bankruptcy, reorganize, merge with another entity, or cease operations.

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

- the development of our LUNAR-COV19 and LUNAR-FLU vaccine candidates;
- the achievement of milestones under our strategic alliance agreements;
- maintaining and/or expanding our manufacturing network and capabilities;
- the terms and timing of any other strategic alliance, licensing and other arrangements that we may establish, includ those with CSL Seqirus and CSL Seqirus' arrangement with Meiji, and any related payments thereunder;
- 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;
- the costs associated with potential litigation related to collaboration agreements; and
- the extent to which we acquire or invest in businesses, products or technologies.

Critical Accounting Policies and Estimates

We prepare our condensed consolidated financial statements in conformity with GAAP. As such, we make certain estimates, judgments and assumptions that we believe are reasonable, based upon information available to us. These judgments involve making estimates about the effect of matters that are inherently uncertain and may significantly impact our reported results of operations and financial condition. We describe our significant accounting policies more fully in Note 2 to our consolidated financial statements for the year ended December 31, 2022 December 31, 2023.

There have been no material changes to our critical accounting policies and estimates from the information provided in Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, included in the 2022 2023 Annual Report.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of interest rates in the United States. Due to the nature of our cash and cash equivalents, we believe that we are not subject to any material market risk exposure. We do not have any foreign currency or other derivative financial instruments.

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 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, 2023 March 31, 2024, our disclosure controls and procedures were not effective due to the material weaknesses in internal control over financial reporting described below.

The Company's disclosure controls and procedures were effective at have been designed to ensure that: (i) information required to be disclosed by us in reports that we file or submit to the SEC under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in applicable rules and forms and (ii) material information required to be disclosed in our reports filed under the Exchange Act is accumulated and communicated to management, including the CEO and the CFO, as appropriate, to allow for accurate and timely decisions regarding required disclosure.

Management does not expect that our disclosure controls and procedures will prevent all error and all fraud. The effectiveness of our or any system of disclosure controls and procedures, however well designed and operated, can provide only reasonable assurance level, that the objectives of the system will be met and we believe is subject to certain limitations, including the condensed exercise of judgment in designing, implementing, and evaluating controls and procedures and the assumptions used in identifying the likelihood of future events.

Material Weaknesses in Internal Control over Financing Reporting Existing as of March 31, 2024

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim consolidated financial statements will not be prevented or detected on a timely basis.

Management concluded that the material weaknesses disclosed in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2024 continued to exist as of March 31, 2024. Specifically, management concluded that the following material weaknesses exist as of March 31, 2024:

- A material weakness related to information technology general controls ("ITGCs") that support our financial reportir processes; Management determined that we did not maintain effective controls over (i) user access to ensure appropriate segregation of duties and adequately restrict user and privileged access to financial applications, programs and data to the appropriate personnel; (ii) program change management for financial applications to ensu that information technology ("IT") program and data changes affecting financial IT applications and underlying accounting records are identified, tested, authorized and implemented appropriately; and (iii) IT operations controls ensure that critical interface jobs are monitored. As a result, our related IT dependent manual and application contr that rely upon the affected ITGCs, or information coming from IT systems with affected ITGCs, were also deemed ineffective.
- A material weakness related to revenue recognition. Management determined that certain control activities within th area of revenue did not operate effectively, specifically controls over the review of costs incurred in satisfaction of o performance obligations under collaboration arrangements.

Notwithstanding the identified material weaknesses, management does not believe that the deficiencies had an adverse effect on our reported operating results or financial condition, and management has determined that the financial statements and other information included in this Form 10-Q for the quarterly periods ended September 30, 2023 report and other periodic filings present fairly present, in all material respects our financial position, condition and results of operations comprehensive loss, statements of stockholders' equity at and cash flows for the periods presented presented.

Plan for Remediation of Material Weaknesses

Our remediation efforts are ongoing, and we will continue our initiatives to implement measures designed to ensure that control deficiencies contributing to the material weaknesses are remediated, such that these controls are designed, implemented, and operating effectively. We are committed to making the necessary changes and improvements to our system of controls to address the material weaknesses in conformity internal control over financial reporting described above.

Our renewed emphasis of designing and implementing improved processes and controls involves but is not limited to the following:

- Expand available resources with U.S. generally accepted experience designing and implementing control activities, including ITGCs and automated controls, both by hiring internally and the use of third-party consultations and specialists.
- Adjust access profiles in IT systems and relevant software, and adjust access review controls accordingly.
- Refine the control to identify access profiles in IT systems and software that result in risks of segregation of duties.
- Perform ongoing training with control performers to improve documentation that supports effective control activities including evidence over the completeness and accuracy of information produced by the Company.
- Add additional technical accounting principles. resource to review our revenue accounting along with financial disclosures for collaboration arrangements on a quarterly basis.

We are in the process of implementing the remediation activities as of the date of this report and believe that upon completion, we will have strengthened our ITGCs, and controls related to accounting for collaboration arrangements to address and successfully remediate the identified material weaknesses. However, control weaknesses are not considered remediated until new internal controls have been operational for a period of time, are tested, and management concludes that these controls are operating effectively. We expect to complete the remediation activities as early as practicable in the fiscal year 2024. We will continue to monitor the effectiveness of these remediation measures, and we will make any changes to the design of this plan and take such other actions that we deem appropriate given the circumstances.

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 and 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 and our principal financial officer and principal accounting officer concluded that there were no changes in our internal controls over financial reporting during the periods 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.

From time to time, we may be involved in various legal proceedings and subject to claims that arise in the ordinary course of business, including those related to governmental inquiries, intellectual property and commercial relationships. The subject matter of any such legal proceedings or claims are or will be highly complex and subject to substantial

uncertainties. The outcome of any such proceedings or claims, regardless of the merits, are and will be inherently uncertain; therefore, assessing the likelihood of loss and any estimated damages is difficult and subject to considerable judgment.

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, 2022 December 31, 2023, which we strongly encourage you to review. Other than as set forth below, there There have been no material changes from the risk factors described in our Annual Report on Form 10-K for the year ended December 31, 2022 December 31, 2023 filed with the Commission on March 29, 2023 and in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 filed with the Commission on August 7, 2023 March 14, 2024.

Evolving dynamics in the market for COVID-19 vaccines are likely to impact our financial results.

With the global transition of COVID-19 from pandemic to endemic, the commercial market for COVID-19 vaccines is facing several challenges, including a more fragmented customer base, less predictability in orders, greater seasonality of demand, increased distribution costs, and higher costs of goods sold due to single-dose or lower-dose presentations. Such factors could impact the potential market for our COVID-19 vaccine (under our collaboration with CSL Seqirus), if approved. Further, our continued development efforts for our COVID-19 vaccine could face increased research and development costs, including for clinical trials, when updating COVID-19 vaccines for new variants of concern.

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.

Rule 10b5-1 Trading Arrangements

During the three months ended September 30, 2023 March 31, 2024, none of our directors or officers adopted or terminated a "Rule 10b5-1 trading arrangement" (as defined in Item 408 of Regulation S-K of the Exchange Act) intended to satisfy the affirmative defense conditions of Rule 10b5-1(c) under the Exchange Act, other than as follows:

- KiethKeith C. Kummerfeld Senior Vice President, Corporate Controller and Principal Accounting Officer, modified an existing's Rule 10b5-1trading arrangement on August 24, 2023. Mr. Kummerfeld's 10b5-1 trading arrangement provides forterminated on March 18, 2024 upon the exercise effective date of up to an aggregate of

36,064 options to purchase common stock and subsequent sale of such underlying shares of common stock, until August 23, 2024. his resignation.

There were no "non-Rule 10b5-1 trading arrangements" (as defined in Item 408 of Regulation S-K of the Exchange Act) adopted or terminated during the three months ended September 30, 2023 by our directors and officers.

Item 6. Exhibits.

Exhibit Index

Exhibit Number	Description
1.1	Controlled Equity Offering℠ Sales Agreement, dated as of December 23, 2022 by and between Cantor Fitzgerald & Co, Wells Fargo Securities, LLC and Arcturus Therapeutics Holdings Inc. Incorporated by reference to Exhibit 1.2 to Registration Statement on Form S-3 filed on December 23, 2022 (File No. 333269003).
1.2	Amendment No. 1 to Controlled Equity Offering℠ Sales Agreement by and between Cantor Fitzgerald & Co, Wells Fargo Securities, LLC, William Blair & Company, L.L.C., and Arcturus Therapeutics Holdings Inc. Incorporated by reference to Exhibit 1.1 to Form 8-K filed on August 7, 2023.
3.1	Certificate of Incorporation. Incorporated by reference to Annex B to the proxy statement/prospectus which forms part of the Registration Statement on Form S-4 filed on March 18, 2019 (File No. 333-230353).
3.2	Certificate of Amendment, dated November 25, 2020. Incorporated by reference to Exhibit 3.1 to Form 8-K filed on November 25, 2020 (File No. 001-38942).
3.3	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	Description of Registrant's Securities. Incorporated by reference to Exhibit 4.1 to the Company's Annual Report on Form 10-K for the year ended December 31, 2021 filed on February 28, 2022 (File No. 001-38942).

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†	Amended and Restated 2019 Omnibus Equity Incentive Plan. Incorporated by reference Exhibit 4.3 to the Registration Statement on Form S-8 filed on August 5, 2020 (File No. 333-240397).
10.3**	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).
10.4**	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).
10.5**	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).
10.6**	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).
10.7**	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).
10.8**	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.
10.9**	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).

10.10**	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).
10.11**	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).

10.12**	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 on May 14, 2018 (File No. 001-35932).
10.13	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 on March 18, 2019 (File No. 001-35932).

10.14	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).
10.15	First Amendment to 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).

10.16**	Acceptance Letter, dated March 4, 2020, by and 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).
10.17†	2020 Employee Stock Purchase Plan. Incorporated by reference to Exhibit 4.3 to Form S-8 filed on August 5, 2020 (File No. 333-240392).
10.18	Second Amendment to Lease, by and between Arcturus Therapeutics, Inc. and ARE-SD Region No. 44, LLC, dated November 13, 2020. Incorporated by reference to Exhibit 10.29 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 filed on March 1, 2020 (File No. 001-38942).
10.19	Third Amendment to Lease, by and between Arcturus Therapeutics, Inc. and ARE-SD Region No. 44, LLC, dated February 25, 2021. Incorporated by reference to Exhibit 10.30 to the Company's Annual Report on Form 10-K for the year ended December 31, 2020 filed on March 1, 2020 (File No. 001-38942).
10.20	Arcturus Therapeutics Holdings Inc. Severance Policy for Executives. Incorporated by reference to Exhibit 10.1 to Current Report on Form 8-K filed on April 26, 2021 (File No. 001-38942).
10.21	Lease, by and between Arcturus Therapeutics, Inc. and TPSC IX, LLC, dated September 29, 2021. Incorporated by reference to Exhibit 10.35 to Form 10-Q filed on November 9, 2021 (File No. 001-38942).
10.22†	Arcturus Therapeutics Holdings Inc. 2021 Inducement Equity Incentive Plan. Incorporated by reference to Exhibit 4.1 to the Registration Statement on Form S-8 filed on October 20, 2021 (File No. 333-260391).
10.23†	Amended and Restated 2019 Omnibus Equity Incentive Plan, as amended. Incorporated by reference to Exhibit 4.3 to the Registration Statement on Form S-8 filed on June 30, 2022.
10.24**	Cost Reimbursement Contract dated August 31, 2022, by and between Arcturus Therapeutics Holdings Inc. and Biomedical Advanced Research and Development Authority of the U.S. Department of Health and Human Services. Incorporated by reference to Exhibit 10.36 to Quarterly Report on Form 10-Q filed on November 9, 2022 (File No. 001-38942).
10.25**	Study Support Agreement, dated October 31, 2022, by and between Arcturus Therapeutics, Inc. and Vinbiocare Research and Manufacture Joint Stock Company. Incorporated by reference to Exhibit 10.1 to Current Report on Form 8-K filed on November 4, 2022 (File No. 001-38942).

10.26**	Collaboration and License Agreement, dated November 1, 2022, by and between Arcturus Therapeutics Holdings Inc. and CSL Limited. Incorporated by reference to Exhibit 10.38 to Quarterly Report on Form 10-Q filed on November 9, 2022 (File No. 001-38942).
10.27**	Manufacturing Support Agreement Termination Letter, dated March 23, 2023, by and between Arcturus Therapeutics, Inc. and the Economic Development of Singapore. Incorporated by reference to Exhibit 10.41 to Annual Report on Form 10-K filed on March 29, 2023 (File No. 001-38942).
10.28**	Credit Agreement dated April 21, 2023, by and between Arcturus Therapeutics, Inc. and Wells Fargo Bank, National Association. Incorporated by reference to Exhibit 10.28 to Quarterly Report on Form 10-Q filed on May 9, 2023 (File No. 001-38942).

10.29**	Security Agreement dated April 21, 2023, by and between Arcturus Therapeutics, Inc. and Wells Fargo Bank, National Association. Incorporated by reference to Exhibit 10.29 to Quarterly Report on Form 10-Q filed on May 9, 2023 (File No. 001-38942).
10.30**	Revolving Line of Credit Note dated April 21, 2023, by and between Arcturus Therapeutics, Inc. and Wells Fargo Bank, National Association. Incorporated by reference to Exhibit 10.30 to Quarterly Report on Form 10-Q filed on May 9, 2023 (File No. 001-38942).
10.31** *	Amendment Number One to Collaboration and License Agreement, dated August 3, 2023, by and between Arcturus Therapeutics, Inc. and Seqirus Inc. Incorporated by reference to Exhibit 10.31 to Quarterly Report on Form 10-Q filed on November 14, 2023 (File No. 001-38942).

10.32** *	Amendment No. 4 to Letter Agreement, dated September 25, 2023, by and between Arcturus Therapeutics, Inc. and the Cystic Fibrosis Foundation. Incorporated by reference to Exhibit 10.32 to Quarterly Report on Form 10-Q filed on November 14, 2023 (File No. 001-38942).

10.33** *	Amendment Number Two to Collaboration and License Agreement, dated March 29, 2024, by and between Arcturus Therapeutics, Inc. and Seqirus Inc.
31.1*	Certification of 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*	The following financial statements and footnotes from the Registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2023 March 31, 2024 formatted in Inline Extensible Business Reporting Language (Inline XBRL): 101.INS Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document 101.SCH Inline XBRL Taxonomy Extension Schema 101.CAL Inline XBRL Taxonomy Extension Calculation Linkbase 101.DEF Inline XBRL Taxonomy Extension Definition Linkbase 101.LAB Inline XBRL Taxonomy Extension Label Linkbase 101.PRE Inline XBRL Taxonomy Extension Presentation Linkbase
104	Cover Page Interactive Data File (embedded within the Inline XBRL 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 of 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 14, 2023 May 8, 2024

By: /s/ Andy Sassine

Andy Sassine

Chief Financial Officer

Principal Financial and Accounting Officer

REDACTED

REDACTED

Certain identified information, indicated by [***], has been excluded from the exhibit because it is both (i) not material and (ii) would likely cause competitive harm if publicly disclosed.

AMENDMENT NUMBER ONE TWO

TO COLLABORATION AND LICENSE AGREEMENT

This Amendment Number One Two to Collaboration and License Agreement (this (this "**Amendment Number Two**") is made and entered into on August 3, 2023 March 29, 2024 (the "**Amendment Number Two Effective Date**") and amends the Collaboration Agreement by and between Arcturus Therapeutics, Inc., a Delaware corporation ("**Arcturus**"), and Seqirus Inc., a Delaware corporation ("**Seqirus**"), and further amends the Collaboration and License Agreement executed on November 1, 2022 with an effective date of December 8, 2022, as amended by Amendment No. 1 on August 10, 2023 (the "**Collaboration Agreement**"). Arcturus and Seqirus are

sometimes referred to herein individually as a "**Party**" and together as the "**Parties**." Capitalized terms used in this Amendment Number Two that are not defined herein shall have the meanings ascribed to such terms in the Collaboration Agreement.

RECITALS

WHEREAS, Arcturus and Seqirus are parties to the Collaboration Agreement;

WHEREAS, Arcturus and Seqirus have entered into that certain Collaboration and License Agreement ("letter agreement dated as of December 22, 2023 (the "**Collaboration Agreement Bridging Letter**") executed on November 1, 2022 and with an effective date of December 8, 2022 (the "**Collaboration Agreement Effective Date**" "); and

WHEREAS, the Parties desire that Arcturus sponsor to, among other things, modify and have conducted a Phase 1 clinical study in update the Influenza Field as further described herein, [***] Development Plan and to amend the Parties desire to Collaboration Agreement on the terms and conditions set forth payment obligations of Seqirus in connection therewith; herein;

NOW, THEREFORE, in consideration of the premises and the mutual promises and conditions hereinafter set forth, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, do hereby agree as follows:

1. D Amended efinitions [***] **Development Plan**. Attached hereto as Schedule 1 to this Amendment Number Two is the amended [***] Development Plan. The following definitions are hereby added amended [***] Development Plan was approved by the JDC on March 21, 2024, subject to Article 1 execution of the Collaboration Agreement: this Amendment Number Two.

1.1 2." Next Gen Product Influenza Phase I Development Plan .

2.1 **Replacing** " means a development plan setting forth in reasonable detail specific Development activities, to be performed with respect to the Vaccine Candidates or Vaccine Products [***] **of** [***]. The [***] in the Influenza Field in connection Collaboration Agreement is hereby replaced throughout the Collaboration Agreement with Phase I Study(ies), [***], the [***], the [***], and the [***] for in the Collaboration Agreement is hereby [***]. and [***].

1.2 "**Influenza Phase I Study**" means the Phase I Study in [***] described in the Influenza Phase I Study Protocol. The Influenza Phase I Study may be modified only by mutual written agreement of the Parties. with [***]:

1.3
"**Influenza Phase I Study Activities**" has the meaning set forth in Section 3.2.7 of this Agreement.

1.4 “**Influenza Phase I Study Budget**” means the [***].

1.5

“**Influenza Phase I Study Protocol**” means the [* [**].

1.6 “**Start Up Agreement**” means [***].

2. JDC Specific Responsibilities. The [***] is hereby added to [***] of the Collaboration Agreement after [***] , and [***] is hereby added to [***] of the Collaboration Agreement after [***].

3. Influenza Phase I Study Activities. The following section is hereby added as new Section 3.2.7 of the Collaboration Agreement:

3.2.7. Influenza Field Phase 1 Study.

(i) Arcturus will use Commercially Reasonable Efforts to act as the sponsor of the Influenza Phase I Study and to undertake additional related activities assigned to Arcturus as outlined in the Influenza Phase I Development Plan (collectively, the “**Influenza Phase I Study Activities**”). Influenza Phase I Study Activities include [***], [***], [***], and [***] pre-clinical and [***] do not include means (i) [***], (ii) [***], (iii) [***], or (iv) [***]. If the Parties determine to replace or transition the Research and Development of any of such [***] with [***], then, upon mutual written agreement of the Parties, the [***] shall be deemed to include [***] or [***].”

2.2 **Arcturus** [***]. The [***] is hereby [***] and [***] in [***] with [***]:

[***] means [***] and [***] by [***] in connection with [***] described in [***].

2.3 **Replacing Section 3.2.3.** Section 3.2.3 of the Collaboration Agreement is hereby replaced in its entirety with the following:

"3.2.3 [***] **Field Development Obligations of Arcturus**. Arcturus shall, in consideration of the payment commitments given under this Agreement and on the terms and conditions of this Agreement, and as provided in [***], undertake the [***] work that may be deemed necessary to support the [***] in order to obtain Regulatory Approvals for [***] in [***] in [***], [***] and [***] as a [***] and [***] work to support [***] in order to obtain Regulatory Approvals for [***] in [***], [***] and [***] as [***] in [***]. Such activities include undertaking the [***], along with the Development of [***], Development of [***], Development of [***], undertaking [***] to [***] and the obtaining of Regulatory Approvals for [***] in [***], [***] and [***], as a [***] , all as and to the extent set forth in the [***] Development Plan as [***] activity or responsibility. [***] will support [***] on filings in other countries as agreed in good faith by and between the Parties. In the event that the Parties determine to have [***] undertake a [***] , or any other activities not reflected in the [***] Development Plan, then the Parties will amend the [***] Development Plan in accordance with Section 3.2.2 (Updates; Amendments). For avoidance of doubt, (i) if the Parties determine to have [***] undertake a [***], then the costs thereof shall be treated in a manner similar to that of the [***] work in accordance with Section 3.6.2(i), and (ii) The except to the extent otherwise expressly agreed in writing by the Parties, [***] shall review be responsible for undertaking any [***] and mutually agree on [***] activities following the receipt of the [***] in [***], [***] and [***], and [***] shall have no obligation to undertake any updates [***]. "

2.4 **Replacing Section 3.6.2.** Section 3.6.2 of the Collaboration Agreement is hereby replaced in its entirety with:

"3.6.2 **Responsibility for Funding Costs Relating to Research and Development Activities in the** [***] **Field**. This Section 3.6.2 only applies to the [***] . The JDC shall review Field.

(i) [***] covering**Development**. Subject to the terms of this Agreement (including payment of milestone payments under Section 6.3 (Development Milestones)), [***] at least shall be responsible for [***] of the [***]in the [***] Field as set forth in the [***] Development Plan and Section 3.2.3 ([***] Development Obligations of Arcturus); provided, however, that [***] shall be responsible for funding [***] of such activities that are [***] in support of [***] and [***] other than [***] and [***], to the extent not theretofore covered by the Development Milestone Payments.

(ii) [***] **Development**.

a) Subject to the terms of this Agreement (including payment of milestone payments under Section 6.3.1(ii) through 6.3.1(ix) and the determination of

[***] in accordance with Section 6.5), [***] shall be responsible for [***] of the [***] of the [***] in the [***] Field allocated to be conducted by [***] in the [***] Development Plan as of the Effective Date (along with any additional activities related to the [***] for which the purpose Parties agree in an amended [***] Development shall be funded by [***]).

b) For avoidance of considering appropriate amendments thereto. In addition, either Party, through its representatives on doubt, [***] shall be responsible for funding [***] of the JDC, may propose amendments [***] in the [***] Field as set forth in the [***] Development Plan.

c) [***] of such [***] Development Costs and [***] Development Costs described in clauses (a) and (b) of this Section 3.6.2(ii) shall be applied by [***] to the calculation of [***].

(iii) **Additional Development**. Except as set forth in clauses (i) and (ii) above, [***] shall be responsible for funding [***] of any additional [***] in the [***] Field. For avoidance of doubt, [***] of such [***] Development Costs shall be applied by [***] to the calculation of [***]. Any such additional [***] by [***] will be paid by [***] in the manner set forth in Section 3.6.1(ii) and 3.6.1(iii).”

2.5 [***] **Fees**. The Parties acknowledge and agree that all costs and fees paid or payable by [***] to [***] for pursuant to any agreement between [***] at any time. and [***] shall be the sole responsibility of [***].

4. 3. Development Milestone Payments for Influenza Phase I Study Activities. [***] **Responsibilities Transition**. The following is hereby added Parties have agreed to a transition of commercial manufacturing responsibilities from [***] to [***] and shall [***] to complete such transition of drug product manufacturing by [***] and of [***] by [***] as new Sections 6.3.2(viii)-(x) further detailed in a manufacturing transition plan to be entered into by the Parties within [***] after the Amendment Number Two Effective Date. For the avoidance of doubt, (i) costs will be borne by the Collaboration Agreement:

6.3.2(viii) Upon execution of the Start Up Agreement, Seventeen Million Five Hundred Thousand Dollars ($17,500,000) (“**Payment One**”);

6.3.2(ix) Parties consistent with Section 4.10 (Manufacturing Technology Transfer Upon [***], Request) unless otherwise expressly agreed in writing by the Parties, and (ii) the Parties agree

that [***] shall continue to [***] to [***], or at [***] (such amount, "**Payment Two**"); provided by the Parties in writing, certain proprietary raw materials for clarity that, for purposes of such calculation, [***] may apply any [***] permitted to be applied for up to and use in commercial manufacturing undertaken by [***], subject to including [***];

6.3.2(x) Upon completion until [***], unless otherwise agreed between the Parties. Following the transition of [***] and upon request of [***], [***], or [***] (such amount, "**Payment Three**"); and

6.3.2(xi) Upon completion shall cooperate in good faith to provide technical support for management of [***], [***], or [***] (such amount, "**Payment Four**"). If clause (ii) exceeds clause (i), then such amount shall technical investigations, with costs to be [***].

5. Start Up Agreement Milestone. The borne by the Parties acknowledge that the milestone set forth in consistent with Section 6.3.2(viii) for Payment One was met on June 12, 2023, which was the date of execution of the Start Up Agreement. Seqirus shall make Payment One on or before August 11, 2023. 4.10.

6. 3.1 **R& Commercial Supply in the** D Credit [***] **. Field.** Section 3.6.3 4.9 of the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

"3.6.3 4.9 **R&D Credit Commercial Supply in the** [***] **Field**.

4.9.1 Not later than [***] days after [***], [***] and [***] shall enter into a supply agreement pursuant to which, subject to Section 4.10 (Manufacturing Technology Transfer Upon [***] Request), [***] shall supply to [***] the [***] and[***] in the [***] Field (the "**Supply Agreement**") in such quantities as [***] may order in accordance with the terms and conditions of such agreement. The Supply Agreement shall contain the terms set forth in Schedule 4.9 (Commercial Supply in the [***] Field) and such additional terms as are reasonable and customary for similar supply agreements that shall be negotiated and agreed by the Parties in good

faith. In the event that the Parties are not able to agree on such additional terms to be included in the Supply Agreement by the date that is [***] after [***], such additional terms shall be determined in accordance with Section 13.6 (Dispute Resolution). Arcturus will facilitate, at Seqirus' request, discussions with its contract manufacturers and suppliers for the provision of manufacturing and supply services to [***] necessary for the [***] of [***] and [***] and, to the extent practicable, the assignment or novation of any such contracts to [***].

Pursuant to the preceding paragraph, the Parties entered into the Supply Agreement (titled the [***] Commercial Supply Agreement) dated as of [***], as amended by [***] thereto effective [***], providing for the manufacture and supply of [***]. As of the Amendment Number Two Effective Date, there are [***]to be [***]under the Supply Agreement. The Parties have also entered into that certain [***] dated as of [***], as amended by [***] (the "[***]"), pursuant to which [***] will provide supply to [***] [***]. Other than obligations under the [***] and [***], and notwithstanding anything else in this Agreement, [***]shall have no obligations for the commercial supply of any [***] or [***], except as may be expressly agreed in writing by the Parties subsequent to the [***]."

3.2 **Next Gen Product**. Clause (i) of Section 4.10 of the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

> "…(i) the then-current process for the Manufacture of the [***] in the [***] Field, including Research Scale Manufacturing, Small Lab Scale Manufacturing and Large Scale Manufacturing of [***] and any [***] in the [***] Field,…"

4. Development Milestones. Section 6.3 and Section 6.3.1 (but not Sections 6.3.2, 6.3.3 or 6.3.4) of the Collaboration Agreement are hereby amended and replaced in its entirety with the following. The Parties acknowledge and agree that, as of the Amendment Number Two Effective Date, the milestones set forth in Sections 6.3.1 (i)a) ([***]), 6.3.1(ii), 6.3.1(iii) and 6.3.1(iv) have been achieved and the corresponding Development Milestone Payments have been paid by Seqirus.

"6.3 **Development Milestones**. In partial consideration of the rights granted by Arcturus to Seqirus hereunder and subject to the terms and conditions set forth in this Agreement, during the Payment Term, Seqirus shall pay to Arcturus a milestone payment, calculated as set forth in this Section 6.3 (each, a "**Development Milestone Payment**").

6.3.1 [***] **Field**. The Development Milestone Payments set forth in this Section 6.3.1 shall be:

(a)

(1) with respect to Section 6.3.1(i), in connection with the completion of the [***] relating to the monovalent [***] and [***] in [***], [***] and [***] of the [***] as [***] and [***], and

(2) with respect to Sections 6.3.1(ii)-(ix), in connection with the completion of the [***] relating to, and [***] in [***] and [***] of, the [***] to meet such milestone,

---

and in each case of (1) and (2) the delivery of [***] to enable [***] to seek [***] in other countries or jurisdictions in the Territory; and

(b) payable only one time and upon the first achievement of the corresponding milestone event by a [***], and no amounts shall be due for subsequent or repeated achievements of such milestone event for any [***]. For clarity, each of the Development Milestone Payments set forth in subsections (ii)-(ix) below is not dependent on achieving Regulatory Approvals in [***] or [***].

6.3.1(i)

a) [***] Milestone. Upon [***].

b) [***] Milestones.

1. Upon [***]; and

2. Upon [***].

6.3.1 (ii) upon [***];

6.3.1 (iii) upon [***];

6.3.1(iv) upon [***];
6.3.1 (v) upon [***];
6.3.1 (vi) upon [***];
6.3.1 (vii) upon [***];
6.3.1 (viii) upon [***];
6.3.1 (ix) upon [***]; and
6.3.1 (x)
A. upon [***];

B. upon [***]; and

C. upon [***].

The Development Milestone Payments set forth in this Section 6.3.1 shall be payable only one time and upon the first achievement of the corresponding milestone event by a [***] or [***], and no amounts shall be due for subsequent or repeated achievements of such milestone event for any [***] or [***]. Except as otherwise expressly set forth in this Agreement (including Sections 2.1.2(g) and 3.2.2), such milestone payments are non-refundable."

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5. Additional Representations, Warranties or Covenants of Seqirus.

5.1 [***] represents and warrants to [***], that, for [***], [***] [***] [***] than [***] of [***] from [***].

5.2 [***] hereby agrees that, from and after the Amendment Number Two Effective Date and during the Term, [***] will not establish any [***] of [***] with [***] in credit ("[***] in order to [***] of [***] in [***] under [***].

6. Reference to Section 6.3.1(viii).

6.1 The reference to "Section 6.3.1(i) through (viii)" in Sections 3.2.2, 6.9.2, and 6.9.4(i) of the Collaboration Agreement are hereby amended and replaced with "Section 6.3.1(i) through 6.3.1(ix)".

6.2 The reference to "Sections 6.3.1(i)-6.3.1(viii)" in Section 6.8.1 of the Collaboration Agreement is hereby amended and replaced with "Sections 6.3.1(i)-6.3.1(ix)".

6.3 The reference to "Sections 6.3.1(ii)-6.3.1(viii)" in Section 12.10.2 of the Collaboration Agreement is hereby amended and replaced with "Sections 6.3.1(ii)-6.3.1(ix)".

7. [***]") toward**Net Sales** [***]. The following Section 6.6.1(iv) is hereby added to the Collaboration Agreement:

"(iv) Notwithstanding anything elseto the contrary in this Agreement, with respect to [***] conducted during [***] or [***] from [***] in [***], the [***] shall be [***], [***] or [***], as the case may be. In the event that, in a Calendar Year, there are both [***] [***] or [***] from a [***] and [***] by [***] or a [***] for a [***] in a [***] impacted by this Section 6.6.1(iv), and the total [***] for [***] in a [***] in a [***], then [***] by [***], [***] and [***] shall be [***] by [***] or [***] or [***] from [***] and the [***] shall be applied in proportion to [***] from each (e.g., [***].)"

8. Pharmacovigilance.

9.1 Pharmacovigilance Agreement. Notwithstanding Section 8.2 of the Collaboration Agreement, the Parties entered into a Pharmacovigilance Agreement dated May 30, 2023, whereby [***] agreed to [***] than had been contemplated in the Collaboration Agreement, subject to payment terms to be agreed in good faith by the Parties. Other than as expressly set forth in the Pharmacovigilance Agreement, [***] is responsible for [***]. The Parties agree that the Pharmacovigilance Agreement will be amended to reflect that [***] activities and responsibilities undertaken by [***] pursuant to the Pharmacovigilance Agreement shall be transitioned to [***] by [***], and [***] will retain [***] to support [***] and [***].

8.1 **Global Safety Database**.Section 8.3 of the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

"8.3 **Global Safety Database**. The pharmacovigilance agreement under Section 8.2 (Pharmacovigilance) shall provide the terms and conditions under which the Parties will exchange safety related data in order to comply with their respective pharmacovigilance responsibilities.

Except as otherwise set forth in such pharmacovigilance agreement or otherwise agreed by the Parties, [***] shall [***] (at [***] [***] and [***]) the [***] for [***] and [***], and shall provide [***] relevant

information from [***]. [***] will allocate the shall provide [***] as it deems with all information necessary or desirable for [***] to fulfill the

activities set forth comply with its pharmacovigilance responsibilities in the Territory, including, as applicable, any safety-related or adverse drug experiences, from pre-clinical or clinical laboratory, animal toxicology and pharmacology studies, and Clinical Studies with a [***] or [***] or the [***] platform, reported anywhere in the world, in each case in the form and manner reasonably requested by [***] and further specified in the pharmacovigilance agreement. In addition, with respect to any Clinical Trial Applications/Investigational New Drug Applications or Drug Approval Applications that may be maintained by Arcturus or its partners, Seqirus shall provide Arcturus with all information necessary or desirable for Arcturus to comply with its pharmacovigilance responsibilities, including, as applicable, any adverse drug experiences, from pre-clinical or clinical laboratory, animal toxicology and pharmacology studies, Clinical Studies, and commercial experiences, in each case to the extent in [***] possession and control and in the form reasonably requested by [***] and further specified in the pharmacovigilance agreement. As information maintained on the global safety database and listed under this Section 8.3 may relate to the Arcturus Technology platform, [***] shall provide [***] relevant information from the global safety database with which to provide its partners as reasonably required in connection with [***] collaboration and license agreements, subject to the confidentiality provisions thereof."

9. Distributorships, [***] and [***]

9.1 **Distributorships.** Section 4.7 of the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

"4.7 **Distributorships**.

Seqirus shall have the right, in its sole discretion, to appoint its Affiliates, and Seqirus and its Affiliates and Sublicensees shall have the right, in their sole discretion, to appoint any other Person, in the Territory or in any specific country or other jurisdiction of the Territory, to undertake any or all of the following (but only any or all of the following): (a) register any [***] or [***] in the Fields in any given jurisdiction; (b) hold the Regulatory Approval or act as in-country sponsor for the avoidance Regulatory Approval in the Field in any given jurisdiction; (c) undertake bridging or other Clinical Studies or other Development activities in furtherance of doubt, seeking, obtaining, maintaining or updating (including with respect to the conduct of strain updates, post marketing studies and real world evidence studies) such Regulatory Approval for such [***] or [***] in the Fields in such jurisdiction; or (d) distribute, market, and sell such [***] in the Fields ([***]), in each case where (i) such Person purchases its requirements of [***] or [***] for a transfer price from or through Seqirus or its Affiliates or Sublicensees, (ii) [***] does not

book the sales of [***] made by such Person; and (iii) such Person (1) has no right to research or develop [***] or [***] (except to the limited extent necessary to conduct the activities described in clauses (a) through (c) above); and (2) has no right to manufacture or have manufactured [***] ([***]). The term [***]in this Section 4.7 (Distributorships) means [***]. Where [***] or [***] appoints such a Person and such Person is not [***] of [***], such Person shall be a "**Distributor**" for purposes of this Agreement, regardless of whether [***]or [***]has granted any license or sublicense to such Person in connection with such arrangement."

9.2 **Net Sales.** the definition of "Net Sales" in the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

"1.120. "**Net Sales**" means the [***] by Seqirus, its Affiliates or Sublicensees (which shall not include Distributors or wholesalers) as the case may be (each a credit against "**Selling Person**") to Third Parties, or received by Seqirus, its Affiliates or Sublicensees from Distributors, less the following deductions, in each case to the extent specifically related to [***] and taken by the Selling Person or otherwise paid for or accrued by the Selling Person ("**Permitted Deductions**"):

(a) [***];

(b) [***];

(c) [***];

(d) [***];

(e) [***];

(f) [***]; and

(g) [***].

[***] shall not [***]. [***] shall include [***], whether such consideration is in cash, payment in kind, exchange or other form. [***] shall not include sales between or among Seqirus, its Affiliates, or Sublicensees, unless such [***] is consumed by such Affiliate or Sublicensee in the course of its commercial activities. Subject to the above, [***] shall be calculated in accordance with [***]. For purposes of calculating [***], all [***] shall be converted into Dollars in accordance

with Section 6.10 (Mode of Payment).

If any milestone payments except [***] is sold as part of a [***], the portion of [***] from [***], for the [***] set forth in or [***]; provided, however, that, shall be [***] may of the [***] up to (i) during the applicable [***] against, by [***] payable, where [***], and [***]. If such [***] amount [***] or [***] for both the [***] and all [***] in the [***], [***] for the purposes of determining [***] and [***], (ii) the [***] of [***] against [***] payable [***] and (iv[***] of [***] against [***] for [***]. If any [***] is [***] at [***] it will shall be [***] to by the Parties in good faith negotiations based on [***].

Notwithstanding the foregoing, for purposes of the calculation of royalty payments, [***], until [***], or [***], the term "**Net Sales**" when used in this Agreement in the context of a Distributor, or a country or other jurisdiction in the Territory in which Seqirus or its Affiliate or Sublicensee has engaged a Distributor, means any payments by such Distributor to Seqirus or its Affiliates or Sublicensee under the agreement governing such distribution arrangement attributable to the engagement of such Person as a Distributor for, and the provision to such Distributor of, such [***] at which time [***]. in the country or other jurisdiction of the Territory of such distributorship."

7. 9.3 **Defined Term "Plan". Shared Net Profits.** The definition of "Plan" "Shared Net Profits" in the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

"1.177 "**Shared Net Profits**" [***]

9.4 **Schedule 6.5.** Section 3 of Schedule 6.5 of the Collaboration Agreement is hereby amended and replaced in its entirety with the following:

"**Plan 3. "Shared Net Profits" Calculation**. "**Shared Net Profits**" means a is calculated as follows:

For each [***] . for all [***] in the [***] Field, an amount [***]:

8. a.[***];

b.[***];

c.[***];

d.[***]; and

e.[***].

10. Additional Provisions.

10.1 Section 3.4.2 ([***] Field, [***] Field and [***] Field). The last sentence of Section 3.4.2 of the Collaboration Agreement is hereby amended and replaced with the following:

"For avoidance of doubt, the costs therefor shall be [***]and treated in accordance with Section 3.6.1 (Responsibility for Costs Relating to Research and Development Activities in [***] Field, [***] Field and [***]Field)."

11. Miscellaneous.

8.1 11.1**Effect**. Except as specifically amended by this Amendment Number Two, all of the terms and conditions of the Collaboration Agreement shall remain in full force and effect, and this Amendment Number Two shall be read together and construed as one with the Collaboration Agreement.

8.2 11.2**Conflicts**. In the event of a conflict between a provision of the Collaboration Agreement and a provision of this Amendment Number Two, the provisions of this Amendment Number Two will control to the extent of such conflict.

8.3 11.3**Counterparts**. This Amendment Number Two may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Counterparts may be signed or delivered by facsimile or electronically scanned signature page.

[SIGNATURE PAGE FOLLOWS.**]**

THIS AMENDMENT NUMBER TWO IS EXECUTED by the authorized representatives of the Parties as of the Amendment Number Two Effective Date.

ARCTURUS THERAPEUTICS, INC.

By:

Name: Joseph E. Payne

Title: President and CEO

SEQIRUS, INC.

By:

Name: Jonathan Kegerise

Title: President

SEQIRUS, INC.

By:

Name: Melissa Puryear

Title: Secretary

Attachment 1.1 to the Amendment

[***]

Attachment A to [***]

[***]

[***]

Attachment B to [***]

[***]

[***]

Attachment 1.6 Schedule 1 to [***] Amendment Number Two
[***]
[***]Development Plan

[See attached.]

REDACTED
Certain identified information, indicated by [***], has been excluded from the exhibit because it is both (i) not material and (ii) would likely cause competitive harm if publicly disclosed.

AMENDMENT NO. 4 TO LETTER AGREEMENT

This Amendment No. 4 ("***Amendment No. 4***") to the Development Program Letter Agreement of May 16, 2017, as amended on July 13, 2018, July 30, 2019 and December 21, 2021 (as amended, the "***Agreement***"), is entered into and effective as of September 25, 2023 (the "***Amendment No. 4 Effective Date***") by and between

Arcturus Therapeutics, Inc. ("***Arcturus***") and the Cystic Fibrosis Foundation ("***CFF***"). Capitalized terms used but not defined herein have the meanings given to them in the Agreement.

WHEREAS, Arcturus and CFF are parties to the Agreement; and

WHEREAS, Arcturus intends to conduct additional work to develop and test its development candidate ARCT-032, as described on Exhibit A-4 attached hereto (the "***Additional Research Plan***"), and has requested that the CFF provide additional funding to support the Additional Research Plan; and

WHEREAS, CFF desires to provide up to an additional $9,000,000 on the terms and conditions contained in the Agreement and this Amendment No. 4;

NOW, THEREFORE, in consideration of the mutual covenants set forth in the Agreement and this Amendment No. 4 and for other good and valuable consideration, the receipt and sufficiency of which the parties acknowledge, the parties agree as follows:

1. Increased Award.The "Amount of Award" specified in the Agreement is hereby increased by $9,000,000 (the "***Increased Award Amount***") for a total of $24,583,796. The Increased Award Amount shall be disbursed directly to Arcturus in accordance with the Payment Schedule attached hereto as Exhibit B-4. Arcturus shall use the Increased Award Amount to fund the following elements of the Additional Research Plan: (i) [***]; (ii) [***]; (iii) [***]; and (iv) [***] ([***]) [***].

2. Amendment to Section 2 of the Agreement - Financials. Section 2 of the Agreement is hereby deleted in its entirety and the following inserted in lieu thereof:

"2. **Financials**.

2.1 Royalties. In consideration of CFF's Award under this Agreement and CFF's license and transfer of intellectual property and CFF Know-How pursuant to this Agreement, Arcturus shall pay to CFF the following royalties ("***Royalties***"):

(a) (i) [***]% of Net Sales of CF Products and the [***] approved for [***] (collectively "***Covered Products***") in [***] until such Royalties [***] ([***]) times the Actual Award ("[***]"), and then [***]% of such Net Sales thereafter; and

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(ii) [***]% of Net Sales of Covered Products in [***], collectively, until such Royalties reach [***] the [***] ("[***]"), and then [***]% of such Net Sales thereafter;

provided, however, that in the event that Covered Products are sold by a sublicensee of Arcturus, then for purposes of determining Royalties due up to the [***] or [***], such Royalties shall be based on [***]% of amounts received by Arcturus based on such Net Sales by the sublicensee;

provided, however, that once the Royalties on Net Sales of Covered Products collectively reach [***] the Actual Award[***], Arcturus may opt to reduce the royalty rate on such Net Sales to [***] by

notifying CFF thereof and paying CFF an amount equal to [***];

provided further, that the applicable royalty rate specified above shall no longer be applicable in a country with respect to each CF Product or Pulmonary Product individually after the latest to occur of the following: (X) [***]; (Y) [***]; and (Z) [***].

(b) For Products that are neither Covered Products nor OTC Products and that are approved for therapeutic (and not prophylactic or preventive) use and commercial sale in any country, [***] of [***], until such Royalties cumulatively reach [***].

(c) Royalties shall be reduced proportionately if CFF's Actual Award is less than the full Amount of Award by multiplying the respective percentages set forth in this Section 2.1 by a [***], and [***].

2.2 Disposition Payments.

(a) In the event of a license, sale or other transfer of a Covered Product or Arcturus Development Program Technology (excluding Net Sales and any Change of Control Transaction) (a "***Licensing Transaction***"), Arcturus and/or its shareholders shall pay to CFF [***] of [***] up to [***] the [***]. For avoidance of doubt, such consideration shall include upfront payments, milestone payments and royalties, whether paid in cash or other property (including equity), but shall not include payments made at fair market value for the performance of research or development activities.

(b) In the event of a Change of Control Transaction, Arcturus shall pay to CFF [***] of [***]; provided that such payment amount shall not exceed [***] . For avoidance of doubt, such consideration shall be calculated based on all upfront payments, milestone payments and payments under contingent rights, if applicable; provided, for clarity, that if the consideration paid to Arcturus and/or its shareholders consists of equity of the acquiring company, then the payment to CFF may be paid in cash or equity, at the election of the acquiror, with the equity valued at the closing price on the closing date of the Change of Control Transaction.

(c) Each payment paid by Arcturus pursuant to Section 2.2(a) and Section 2.2(b) is a "***Disposition Payment***".

(d) Any Disposition Transaction that is an asset sale or transfer, or a Change of Control Transaction, shall be null and void unless the third-party transferee in such transaction expressly assumes the joint and several obligation of the Royalty obligations specified in Section 2.1.

2.3 Payment Offsets.

(a) A Disposition Payment paid pursuant to a Licensing Transaction shall offset and reduce any Disposition Payment payable pursuant to a Change of Control Transaction, and a Disposition

Payment paid pursuant to a Change of Control Transaction shall offset and reduce any Disposition Payment payable pursuant to a Licensing Transaction.

(b) All Disposition Payments paid by Arcturus shall be credited toward meeting each Royalty Threshold.

(c) All Royalties paid by Arcturus shall offset and reduce any Disposition Payment payable pursuant to a Change of Control Transaction.

(d) Any amounts previously paid to CFF pursuant to Section 2.1(a) (other than amounts paid toward the [***] or [***]) shall reduce the amount otherwise payable to CFF under Section 2.1(b), and any amount paid to CFF pursuant to Section 2.1(b) shall reduce the amounts payable to CFF under Section 2.1(a) (other than amounts payable toward the [***] and [***]).

2.4 General

(a) There shall be added to the Actual Award for purposes of determining the maximum payments to CFF under this Section 2 [***].

(b) The payments to CFF under this Section 2 shall be made within [***] following (i) [***], and (ii) in the case of [***], any payment that is received by Arcturus and/or its shareholders with respect to a Disposition Transaction."

3. Amendment to Section 1 of the Agreement – Reports. The second sentence of Section 1(c) of the Agreement is hereby amended and restated in its entirety to read as follows: "In addition, Arcturus shall prepare and deliver to CFF a closing report within [***] after completion of each of (i) [***], and (ii) [***]."

4. Amendment to Section 12 of the Agreement – Definitions. The following definitions are hereby replaced or added as follows:

- "Disposition Transaction" means a Licensing Transaction and/or Change of Control Transaction, as the case may be.

- "Product" means a product developed by Arcturus with Arcturus' LUNAR platform and controlled by Arcturus (i.e., owned by Arcturus or licensed by Arcturus to a third party). "Product" may include, without limitation, CF Product, Covered Product, Pulmonary Product and/or OTC Product, as the case may be. For avoidance of doubt, in Sections 1, 3, 4, 5 and 12(a) (with respect to the definitions of "Commercially Reasonable Efforts" and "Interruption"), "Product" means a Product that is a CF Product.

- "Royalty Threshold" means the [***], [***], [***] and/or [***], as the case may be.

5. Interruption License Procedure. CFF acknowledges that Arcturus has a significant interest in protecting the proprietary nature of its trade secret assets, including design and optimization technologies and

formulation processes. Therefore, CFF will, within [***] of a grant of the

Interruption License from Arcturus, provide written notice to Arcturus of its intent to further develop the CF Product directly or indirectly. In the event that CFF does not, within [***] after a grant of the Interruption License from Arcturus, provide written notice to Arcturus certifying that CFF has determined to fund and to use commercially reasonable efforts to develop the CF Product, or has licensed the CF Product on an arms-length basis to a third party with sufficient resources to develop and commercialize the CF Product, then the Interruption License shall be deemed terminated; provided that if at the end of such [***] period the CFF is engaged in good faith negotiations with a third party regarding such a license, CFF may request an extension of this period, with Arcturus' consent not to be unreasonably withheld.

6. Exhibits. Exhibit A-4 attached hereto is hereby added to Exhibit A of the Agreement and constitutes a portion of the Development Plan referenced in the Agreement. Exhibit B-4 attached hereto is hereby added to Exhibit B of the Agreement, such that the milestone detailed therein shall be added to the master Payment Schedule of the Agreement.

7. Continuing Effect. Except as set forth in this Amendment No. 4, the Agreement shall remain in full force and effect.

8. Counterparts. This Amendment No. 4 may be executed in any number of counterparts, each of which shall be an original instrument and all of which, when taken together, shall constitute one and the same agreement.

[signature page follows]

IN WITNESS WHEREOF, the undersigned have executed this Amendment No. 4 as of the Amendment No. 4 Effective Date.

CYSTIC FIBROSIS FOUNDATION ARCTURUS THERAPEUTICS, INC.

By: By:

Name: Name:

Title: Title:

Exhibit A-4

[***]

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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 14, 2023 May 8, 2024

By: /s/ Joseph E. Payne

Joseph E. Payne

President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

I, Andy 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 14, 2023 May 8, 2024

By: /s/ Andy Sassine

Andy 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, 2023 March 31, 2024 (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 14, 2023 May 8, 2024

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, 2023 March 31, 2024 (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 14, 2023 May 8, 2024

By: /s/ Andy Sassine

Andy Sassine

Chief Financial Officer

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