UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended March 31, 2021

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

Commission file number 001-38042

ARROWHEAD PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**46-0408024**
(State of incorporation)	**(I.R.S. Employer Identification No.)**

177 E. Colorado Blvd, Suite 700
Pasadena, California 91105
(626) 304-3400
(Address and telephone number of principal executive offices)

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	**ARWR**	**The Nasdaq Global Select Market**

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

Large Accelerated Filer	☒	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 ☒

The number of shares of the registrant’s common stock outstanding as of April 30, 2021 was 104,084,876.

PART I. FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

Arrowhead Pharmaceuticals, Inc.
Consolidated Balance Sheets
(In thousands, except per share amounts)

	(unaudited) March 31, 2021	September 30, 2020
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 372,377	$ 143,583
Accounts receivable	955	845
Prepaid expenses	6,639	4,250
Other current assets	1,845	1,782
Marketable securities	125,793	85,020
Short term investments (held to maturity)	79,148	86,890
TOTAL CURRENT ASSETS	586,757	322,370
Property and equipment, net	39,400	30,881
Intangible assets, net	14,513	15,363
Long term investments (held to maturity)	97,490	137,487
Right-of-use assets	18,370	16,138
Other assets	265	265
TOTAL ASSETS	**$ 756,795**	**$ 522,504**
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$ 5,299	$ 6,829
Accrued expenses	12,862	5,389
Accrued payroll and benefits	2,859	8,061
Lease liabilities	1,272	1,095
Deferred revenue	144,879	19,291
Other current liabilities	17	16
TOTAL CURRENT LIABILITIES	167,188	40,681
LONG-TERM LIABILITIES		
Lease liabilities, net of current portion	22,528	20,044
Deferred revenue, net of current portion	121,530	-
TOTAL LONG-TERM LIABILITIES	144,058	20,044
Commitments and contingencies (Note 7)		
STOCKHOLDERS' EQUITY		
Arrowhead Pharmaceuticals, Inc. stockholders' equity:		
Common stock, $0.001 par value; 145,000 shares authorized; 104,020 and 102,376 shares issued and outstanding as of March 31, 2021 and September 30, 2020, respectively	196	195
Additional paid-in capital	996,645	965,410
Accumulated other comprehensive income	102	18
Accumulated deficit	(551,394)	(503,844)
TOTAL STOCKHOLDERS' EQUITY	445,549	461,779
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	**$ 756,795**	**$ 522,504**

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

Arrowhead Pharmaceuticals, Inc.
Consolidated Statements of Operations and Comprehensive Income (Loss)
(unaudited)
(In thousands, except per share amounts)

	Three Months Ended March 31,		Six Months Ended March 31,	
	2021	2020	2021	2020
REVENUE	**$ 32,811**	**$ 23,529**	**$ 54,113**	**$ 52,983**
OPERATING EXPENSES				
Research and development	44,697	29,443	81,251	52,817
General and administrative expenses	16,346	16,326	25,147	27,260
TOTAL OPERATING EXPENSES	**61,043**	**45,769**	**106,398**	**80,077**
OPERATING INCOME (LOSS)	(28,232)	(22,240)	(52,285)	(27,094)
OTHER INCOME (EXPENSE)				
Interest income, net	1,524	2,404	3,692	4,585
Other income (expense)	(110)	-	1,043	-
TOTAL OTHER INCOME (EXPENSE)	**1,414**	**2,404**	**4,735**	**4,585**
INCOME (LOSS) BEFORE INCOME TAXES	**(26,818)**	**(19,836)**	**(47,550)**	**(22,509)**
Provision for income taxes	-	-	-	-
NET INCOME (LOSS)	**(26,818)**	**(19,836)**	**(47,550)**	**(22,509)**
NET INCOME (LOSS) PER SHARE - BASIC	$ (0.26)	$ (0.20)	$ (0.46)	$ (0.23)
NET INCOME (LOSS) PER SHARE - DILUTED	$ (0.26)	$ (0.20)	$ (0.46)	$ (0.23)
Weighted average shares outstanding - basic	103,867	101,653	103,303	99,359
Weighted average shares outstanding - diluted	103,867	101,653	103,303	99,359
OTHER COMPREHENSIVE INCOME (LOSS), NET OF TAX:				
Foreign currency translation adjustments	(96)	(433)	84	(238)
COMPREHENSIVE INCOME (LOSS)	**$ (26,914)**	**$ (20,269)**	**$ (47,466)**	**$ (22,747)**

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

Arrowhead Pharmaceuticals, Inc.
Consolidated Statements of Stockholders' Equity
(unaudited)
(In thousands, except per share amounts)

	Common Stock	Amount ($)	Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Non-controlling Interest	Totals
Balance at December 31, 2019	**101,112**	**$ 193**	**$ 922,051**	**$ (196)**	**$ (421,964)**	**$ (555)**	**$ 499,529**
Stock-based compensation	-	-	12,972	-	-	-	12,972
Exercise of stock options	214	-	1,330	-	-	-	1,330
Common stock - restricted stock units vesting	422	1	(1)	-	-	-	-
Common stock - issued for cash	-	-	2	-	-	-	2
Foreign currency translation adjustments	-	-	-	(433)	-	-	(433)
Net income (loss) for the three months ended March 31, 2020	-	-	-	-	(19,836)	-	(19,836)
Balance at March 31, 2020	**101,748**	**$ 194**	**$ 936,354**	**$ (629)**	**$ (441,800)**	**$ (555)**	**$ 493,564**

	Common Stock	Amount ($)	Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Totals
Balance at December 31, 2020	**103,194**	**$ 195**	**$ 978,655**	**$ 198**	**$ (524,576)**	**$ 454,472**
Stock-based compensation	-	-	15,359	-	-	15,359
Exercise of stock options	282	-	2,632	-	-	2,632
Common stock - restricted stock units vesting	544	1	(1)	-	-	-
Foreign currency translation adjustments	-	-	-	(96)	-	(96)
Net income (loss) for the three months ended March 31, 2021	-	-	-	-	(26,818)	(26,818)
Balance at March 31, 2021	**104,020**	**$ 196**	**$ 996,645**	**$ 102**	**$ (551,394)**	**$ 445,549**

	Common Stock	Amount ($)	Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Non-controlling Interest	Totals
Balance at September 30, 2019	**95,506**	**$ 187**	**$ 664,086**	**$ (391)**	**$ (419,291)**	**$ (555)**	**$ 244,036**
Stock-based compensation	-	-	17,464	-	-	-	17,464
Exercise of stock options	686	1	4,331	-	-	-	4,332
Common stock - restricted stock units vesting	956	1	(1)	-	-	-	-
Common stock - issued for cash	4,600	5	250,474	-	-	-	250,479
Foreign currency translation adjustments	-	-	-	(238)	-	-	(238)
Net income (loss) for the six months ended March 31, 2020	-	-	-	-	(22,509)	-	(22,509)
Balance at March 31, 2020	**101,748**	**$ 194**	**$ 936,354**	**$ (629)**	**$ (441,800)**	**$ (555)**	**$ 493,564**

	Common Stock	Amount ($)	Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Totals
Balance at September 30, 2020	**102,376**	**$ 195**	**$ 965,410**	**$ 18**	**$ (503,844)**	**$ 461,779**
Stock-based compensation	-	-	23,502	-	-	23,502
Exercise of stock options	820	-	7,734	-	-	7,734
Common stock - restricted stock units vesting	824	1	(1)	-	-	-
Foreign currency translation adjustments	-	-	-	84	-	84
Net income (loss) for the six months ended March 31, 2021	-	-	-	-	(47,550)	(47,550)
Balance at March 31, 2021	**104,020**	**$ 196**	**$ 996,645**	**$ 102**	**$ (551,394)**	**$ 445,549**

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

Arrowhead Pharmaceuticals, Inc.
Consolidated Statements of Cash Flows
(unaudited)
(In thousands, except per share amounts)

	Six Months Ended March 31,	
	2021	**2020**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income (loss)	$ (47,550)	$ (22,509)
Stock-based compensation	23,502	17,464
Depreciation and amortization	3,766	2,632
Amortization/(accretion) of note premiums/discounts	193	419
Changes in operating assets and liabilities:		
Accounts receivable	(109)	(604)
Prepaid expenses and other current assets	(2,213)	47
Deferred revenue	247,118	(49,630)
Accounts payable	(1,530)	5,768
Accrued expenses	2,271	(5,425)
Other	(497)	723
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	224,951	(51,115)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property and equipment	(11,437)	(7,929)
Purchases of investments	(40,000)	(180,523)
Proceeds from sale of investments	47,545	19,603
NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES	(3,892)	(168,849)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from the exercises of stock options	7,735	4,332
Proceeds from the issuance of common stock	-	250,479
NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES	7,735	254,811
NET INCREASE (DECREASE) IN CASH	228,794	34,847
CASH AND CASH EQUIVALENTS AT BEGINNING OF PERIOD	143,583	221,804
CASH AND CASH EQUIVALENTS AT END OF PERIOD	$ 372,377	$ 256,651

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

Unless otherwise noted, (1) the term "Arrowhead" refers to Arrowhead Pharmaceuticals, Inc., a Delaware corporation and its Subsidiaries, (2) the terms "Company," "we," "us," and "our," refer to the ongoing business operations of Arrowhead and its Subsidiaries, whether conducted through Arrowhead or a subsidiary of Arrowhead, (3) the term "Subsidiaries" refers to Arrowhead Madison Inc. ("Arrowhead Madison") and Arrowhead Australia Pty Ltd ("Arrowhead Australia"), (4) the term "Common Stock" refers to Arrowhead's Common Stock, (5) the term "Preferred Stock" refers to Arrowhead's Preferred Stock and (6) the term "Stockholder(s)" refers to the holders of Arrowhead Common Stock.

NOTE 1. *ORGANIZATION AND SIGNIFICANT ACCOUNTING POLICIES*

Nature of Business and Recent Developments

Arrowhead Pharmaceuticals, Inc. develops medicines that treat intractable diseases by silencing the genes that cause them. Using a broad portfolio of RNA chemistries and efficient modes of delivery, Arrowhead therapies trigger the RNA interference mechanism to induce rapid, deep and durable knockdown of target genes. RNA interference ("RNAi") is a mechanism present in living cells that inhibits the expression of a specific gene, thereby affecting the production of a specific protein. Arrowhead's RNAi-based therapeutics leverage this natural pathway of gene silencing. The Company's pipeline includes ARO-APOC3 for hypertriglyceridemia, ARO-ANG3 for dyslipidemia, ARO-HSD for liver disease, ARO-ENaC for cystic fibrosis, ARO-HIF2 for renal cell carcinoma, ARO-DUX4 for facioscapulohumeral muscular dystrophy, ARO-LUNG2 for chronic obstructive pulmonary disorder ("COPD"), and ARO-COV for the coronavirus that causes COVID-19 and other possible future pulmonary-borne pathogens. ARO-JNJ1, ARO-JNJ2 and ARO-JNJ3 are being developed for undisclosed liver-expressed targets under a collaboration agreement with Janssen Pharmaceuticals, Inc. ("Janssen"). ARO-AAT for liver disease associated with alpha-1 antitrypsin deficiency ("AATD") was out-licensed to Takeda Pharmaceuticals U.S.A., Inc. ("Takeda") in October 2020. JNJ3989 (formerly referred to as ARO-HBV) for chronic hepatitis B virus was out-licensed to Janssen in October 2018. Olpasiran (formerly referred to as AMG 890 or ARO-LPA) for cardiovascular disease was out-licensed to Amgen Inc. ("Amgen") in 2016.

Arrowhead operates lab facilities in Madison, Wisconsin and San Diego, California, where the Company's research and development activities, including the development of RNAi therapeutics, take place. The Company's principal executive offices are located in Pasadena, California.

During the first half of fiscal year 2021, the Company continued to develop its pipeline and partnered candidates. The Company hosted a key opinion leader webinar on its cardiometabolic candidates, ARO-APOC3 and ARO-ANG3. The Company presented positive interim clinical data from AROAAT2002, an open-label Phase 2 clinical study of ARO-AAT, the Company's second-generation investigational RNAi therapeutic being developed as a treatment for the rare genetic liver disease associated with AATD. The Company also announced positive clinical data on its cardiometabolic candidates, ARO-APOC3 and ARO-ANG3, at the American Heart Association Scientific Sessions 2020. The Company filed two Investigational New Drug Applications with the United States Food and Drug Administration to begin a Phase 2b clinical study of ARO-APOC3 in patients with severe hypertriglyceridemia and a Phase 2b clinical study of ARO-ANG3 in patients with mixed dyslipidemia. Finally, the Company announced a collaboration with Takeda to co-develop and co-commercialize ARO-AAT for alpha-1 antitrypsin-associated liver disease. See Note 2 for more information regarding the collaboration with Takeda.

The Company's partnered candidates under its collaboration agreements also continued to progress. Janssen began dosing patients in a Phase 2b triple combination study called REEF-1, designed to enroll up to 450 patients with chronic hepatitis B infection. In connection with the start of this study, Arrowhead earned a $25.0 million milestone payment under the Company's License Agreement with Janssen ("Janssen License Agreement"). The Company is currently performing discovery, optimization and preclinical research and development for ARO-JNJ1, ARO-JNJ2 and ARO-JNJ3 for Janssen as part of the Company's Research Collaboration and Option Agreement with Janssen ("Janssen Collaboration Agreement"). Under the terms of the Janssen agreements taken together, the Company has received $175.0 million as an upfront payment, $75.0 million in the form of an equity investment by Johnson & Johnson Innovation-JJDC, Inc. ("JJDC") in Arrowhead Common Stock, two $25.0 million milestone payments and may receive up to $1.6 billion in development and sales milestones payments for the Janssen License Agreement, and up to $1.9 billion in development and sales milestone payments for the three additional targets covered under the Janssen Collaboration Agreement. The Company is further eligible to receive tiered royalties on product sales up to mid-teens under the Janssen License Agreement and up to low teens under the Janssen Collaboration Agreement.

The Company's collaboration agreement with Amgen for Olpasiran (previously referred to as AMG 890 or ARO-LPA) (the "Second Collaboration and License Agreement" or "Olpasiran Agreement") continues to progress. In July 2020, Amgen initiated a Phase 2 clinical study, which resulted in a $20.0 million milestone payment to the Company. The Company has received $35.0 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock, $30.0 million in milestone payments, and may receive up to an additional $400.0 million in remaining development, regulatory and sales

milestone payments. The Company is eligible to receive up to low double-digit royalties for sales of products under the Olpasiran Agreement.

On October 7, 2020, the Company entered into an Exclusive License and Co-Funding Agreement with Takeda (the "Takeda License Agreement"). Under the Takeda License Agreement, Takeda and the Company will co-develop the Company's ARO-AAT program. Within the United States, ARO-AAT, if approved, will be co-commercialized under a 50/50 profit sharing structure. Outside the United States, Takeda will lead the global commercialization strategy and receive an exclusive license to commercialize ARO-AAT with the Company eligible to receive tiered royalties of 20% to 25% on net sales. In January 2021, the Company received $300.0 million as an upfront payment and is eligible to receive potential development, regulatory and commercial milestones of up to $740.0 million.

The revenue recognition for these collaboration agreements is discussed further in Note 2 below.

The Company is actively monitoring the ongoing COVID-19 pandemic. The financial results for the three and six months ended March 31, 2021 were not significantly impacted by COVID-19. During fiscal year 2020, the Company had temporarily paused enrollment in its two ARO-AAT studies, SEQUOIA and the ARO-AAT 2002 study, but resumed the process of screening and enrolling patients. During the pause in enrollment, patients already enrolled in these studies continued to be dosed per protocol and continued to come in for their follow up visits. Additional delays have occurred in the Company's earlier stage programs, but the Company does not expect a material impact to any program's anticipated timelines. Additionally, the Company's operations at its research and development facilities in Madison, Wisconsin and San Diego, California, and its corporate headquarters in Pasadena, California have continued to operate with limited impact, other than for enhanced safety measures, including work from home policies. However, the Company cannot predict the impact the progression of COVID-19 will have on future financial results due to a variety of factors including the ability of the Company's clinical sites to continue to enroll subjects, the ability of the Company's suppliers to continue to operate, the continued good health and safety of the Company's employees, and ultimately the length and severity of the COVID-19 pandemic.

Liquidity

The Consolidated Financial Statements have been prepared in conformity with the accounting principles generally accepted in the United States of America ("GAAP"), which contemplate the continuation of the Company as a going concern. Historically, the Company's primary sources of financing have been through the sale of its securities and revenue from its collaboration agreements. Research and development activities have required significant capital investment since the Company's inception. The Company expects its operations to continue to require cash investment to pursue its research and development goals, including clinical trials and related drug manufacturing.

At March 31, 2021, the Company had $372.4 million in cash and cash equivalents (including $2.4 million in restricted cash), $79.1 million in short-term investments, $125.8 million in marketable securities and $97.5 million in long-term investments to fund operations. During the six months ended March 31, 2021, the Company's cash and investments balance increased by $221.8 million, which was primarily the result of the $300 million upfront payment from the Takeda License Agreement, partially offset by cash used to fund the Company's research and development operations and general and administrative expenses.

Summary of Significant Accounting Policies

There have been no changes to the significant accounting policies disclosed in the Company's most recent Annual Report on Form 10-K.

Recent Accounting Pronouncements

In November 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-18 Collaborative Arrangements (Topic 808). This update provides clarification on the interaction between Revenue Recognition (Topic 606) and Collaborative Arrangements (Topic 808) including the alignment of unit of account guidance between the two topics. ASU 2018-18 became effective for the Company on October 1, 2020 and did not have a material impact on its Consolidated Financial Statements.

In August 2018, the FASB issued ASU No. 2018-15 Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract. The new standard requires that certain implementation costs for cloud computing arrangements are capitalized and amortized over the term of the associated hosted cloud computing arrangement service. Capitalized implementation costs are classified in prepaid expenses and other assets. The amortization of the capitalized asset is presented in the same line on the statement of operations and comprehensive loss as the fees for the associated hosted cloud computing arrangement service and not included with depreciation or amortization expense related to property and equipment or intangible assets. Cash flows related to capitalized implementation costs are presented in cash flows used in operating activities. ASU 2018-15 became effective for the Company on October 1, 2020 and did not have a material impact on its Consolidated Financial Statements.

NOTE 2. ***COLLABORATION AND LICENSE AGREEMENTS***

Amgen Inc.

On September 28, 2016, the Company entered into two collaboration and license agreements and a common stock purchase agreement with Amgen. Under the Second Collaboration and License Agreement or Olpasiran Agreement, Amgen has received a worldwide, exclusive license to Arrowhead's novel, RNAi Olpasiran (previously referred to as AMG 890 or ARO-LPA) program. These RNAi molecules are designed to reduce elevated lipoprotein(a), which is a genetically validated, independent risk factor for atherosclerotic cardiovascular disease. Under the other collaboration and license agreement (the "First Collaboration and License Agreement" or the "ARO-AMG1 Agreement"), Amgen received an option to a worldwide, exclusive license for ARO-AMG1, an RNAi therapy for an undisclosed genetically validated cardiovascular target. In both agreements, Amgen is wholly responsible for clinical development and commercialization. Under the terms of the agreements taken together, the Company has received $35.0 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock, and $30.0 million in milestone payments, and may receive up to an additional $400.0 million in remaining development, regulatory and sales milestone payments. The Company is further eligible to receive up to low double-digit royalties for sales of products under the Olpasiran Agreement. In July 2019, Amgen informed the Company that it would not be exercising its option for an exclusive license for ARO-AMG1, and as such, there will be no further milestone or royalty payments under the ARO-AMG1 Agreement.

The Company substantially completed its performance obligations under the Olpasiran Agreement and the ARO-AMG1 Agreement. Future milestones and royalties achieved will be recognized in their entirety when earned. In July 2020, Amgen initiated a Phase 2 clinical study, which resulted in a $20.0 million milestone payment to the Company. During the three and six months ended March 31, 2021 and 2020, the Company recognized $0 and $0 of revenue, respectively. As of March 31, 2021, there were $0 in contract assets recorded as accounts receivable and $0 of contract liabilities recorded as current deferred revenue on the Company's Consolidated Balance Sheets.

Janssen Pharmaceuticals, Inc.

On October 3, 2018, the Company entered into the Janssen License Agreement and the Janssen Collaboration Agreement with Janssen, part of the Janssen Pharmaceutical Companies of Johnson & Johnson. The Company also entered into a stock purchase agreement with JJDC ("JJDC Stock Purchase Agreement"). Under the Janssen License Agreement, Janssen has received a worldwide, exclusive license to the Company's JNJ-3989 (ARO-HBV) program, the Company's third-generation subcutaneously administered RNAi therapeutic candidate being developed as a potential therapy for patients with chronic hepatitis B virus infection. Beyond the Company's Phase 1/2 study of JNJ-3989 (ARO-HBV), Janssen is also wholly responsible for clinical development and commercialization of JNJ-3989. Under the Janssen Collaboration Agreement, Janssen will be able to select three new targets against which Arrowhead will develop clinical candidates. These candidates are subject to certain restrictions and do not include candidates that already were in the Company's pipeline. The Company will perform discovery, optimization and preclinical research and development, entirely funded by Janssen, which on its own or in combination with Janssen development work, is sufficient to allow the filing of a U.S. Investigational New Drug Application or equivalent, at which time Janssen will have the option to take an exclusive license. If the option is exercised, Janssen will be wholly responsible for clinical development and commercialization of each optioned candidate. Under the terms of the agreements taken together, the Company has received $175.0 million as an upfront payment, $75.0 million in the form of an equity investment by JJDC in Arrowhead Common Stock under the JJDC Stock Purchase Agreement, and two $25.0 million milestone payments, and may receive up to $1.6 billion in development and sales milestones payments for the Janssen License Agreement, and up to $1.9 billion in development and sales milestone payments for the three additional targets covered under the Janssen Collaboration Agreement. The Company is further eligible to receive tiered royalties up to mid-teens under the Janssen License Agreement and up to low teens under the Janssen Collaboration Agreement on product sales.

The Company has evaluated these agreements in accordance with FASB Topic 606 - Revenue for Contracts from Customers, which became effective for the Company on October 1, 2018. At the inception of these agreements, the Company identified one distinct performance obligation. Regarding the Janssen License Agreement, the Company determined that the key deliverables included the license and certain R&D services including the Company's responsibility to complete the Phase 1/2 study of JNJ-3989 (ARO-HBV) and the Company's responsibility to ensure certain manufacturing of JNJ-3989 (ARO-HBV) drug product is completed and delivered to Janssen (the "Janssen R&D Services"). Due to the specialized and unique nature of these Janssen R&D Services and their direct relationship with the license, the Company determined that these deliverables represent one distinct bundle and, thus, one performance obligation. The Company also determined that Janssen's option to require the Company to develop up to three new targets is not a material right and, thus, not a performance obligation at the onset of the agreement. The consideration for this option is accounted for separately.

The Company determined the transaction price totaled approximately $252.7 million which includes the upfront payment, the premium paid by JJDC for its equity investment in the Company, the two $25.0 million milestone payments earned and estimated payments for reimbursable Janssen R&D Services to be performed. The Company has allocated the total $252.7 million initial transaction price to its one distinct performance obligation for the JNJ-3989 (ARO-HBV) license and the associated Janssen R&D Services. This revenue will be recognized using a proportional performance method (based on actual costs incurred versus total estimated costs incurred) beginning in October 2018 and ending as the Company's efforts in overseeing the Phase 1/2 clinical trial are completed. During the three months ended March 31, 2021 and 2020, the Company recognized approximately $7.5 million and $22.2 million of revenue associated with this performance obligation, respectively. During the six months ended March 31, 2021 and 2020, the Company recognized approximately $20.2 million and $50.9 million of revenue associated with this performance obligation, respectively. As of March 31, 2021, there were $0.6 million in contract assets recorded as accounts receivable, and $0 of contract liabilities recorded as current deferred revenue on the Company's Consolidated Balance Sheets.

The Company has begun to conduct its discovery, optimization and preclinical research and development of ARO-JNJ1, ARO-JNJ2 and ARO-JNJ3 under the Janssen Collaboration Agreement. All costs and labor hours spent by the Company will be entirely funded by Janssen. During the three months ended March 31, 2021 and 2020, the Company recognized $0.1 million and $1.4 million of revenue associated with these efforts, respectively. During the six months ended March 31, 2021 and 2020, the Company recognized $0.3 million and $2.1 million of revenue associated with these efforts, respectively. As of March 31, 2021, there were $0.3 million of contract assets recorded as accounts receivable and $0 of contract liabilities recorded as current deferred revenue on the Company's Consolidated Balance Sheets.

Takeda Pharmaceuticals U.S.A., Inc.

On October 7, 2020, the Company entered into the Takeda License Agreement with Takeda. Under the Takeda License Agreement, Takeda and the Company will co-develop the Company's ARO-AAT program, the Company's second-generation subcutaneously administered RNAi therapeutic candidate being developed as a treatment for liver disease associated with alpha-1 antitrypsin deficiency. Within the United States, ARO-AAT, if approved, will be co-commercialized under a 50/50 profit sharing structure. Outside the United States, Takeda will lead the global commercialization strategy and receive an exclusive license to commercialize ARO-AAT with the Company eligible to receive tiered royalties of 20% to 25% on net sales. In January 2021, the Company received $300.0 million as an upfront payment and is eligible to receive potential development, regulatory and commercial milestones of up to $740.0 million.

The Company has evaluated the Takeda License Agreement in accordance with FASB Topic 606 - Revenue for Contracts from Customers, which became effective for the Company on October 1, 2018. At the inception of the Takeda License Agreement, the Company identified one distinct performance obligation. The Company determined that the key deliverables included the license and certain R&D services including the Company's responsibilities to complete the initial portion of the SEQUOIA study, to complete the ongoing Phase 2 AROAAT2002 study and to ensure certain manufacturing of ARO-AAT drug product is completed and delivered to Takeda (the "Takeda R&D Services"). Due to the specialized and unique nature of these Takeda R&D Services and their direct relationship with the license, the Company determined that these deliverables represent one distinct bundle and, thus, one performance obligation. Beyond the Takeda R&D Services, Takeda will be responsible for managing future clinical development and commercialization. The Company will co-fund certain of the development and commercialization costs that Takeda manages, and these co-funding amounts will be offset against amounts owed to Arrowhead, either from milestones or royalties earned, or profits earned under the 50/50 profit sharing structure for U.S. commercialization.

The Company determined the initial transaction price totaled approximately $300.0 million, which includes the upfront payment. The Company will exclude any future estimated milestones, royalties, or profit-sharing payments from this transaction price to date. The Company will allocate the total $300.0 million initial transaction price to its one distinct performance obligation for the ARO-AAT license and the associated Takeda R&D Services. Revenue will be recognized using a proportional performance method (based on actual costs incurred versus total estimated costs incurred for the Takeda R&D Services). Revenue for the three months ended March 31, 2021 and 2020 were $25.4 million and $0, respectively. Revenue for the six months ended March 31, 2021 and 2020 were $33.6 million and $0, respectively. As of March 31, 2021, there were $0 in contract assets recorded as accounts receivable, $144.9 million in contract liabilities recorded as deferred revenue and $121.5 million in contract liabilities recorded as deferred revenue, net of the current portion.

NOTE 3. ***PROPERTY AND EQUIPMENT***

The following table summarizes the Company's major classes of property and equipment:

	March 31, 2021	September 30, 2020
	(In thousands)	
Computers, office equipment and furniture	$ 1,022	$ 662
Research equipment	23,894	20,654
Software	599	631
Leasehold improvements	33,107	25,238
Total gross fixed assets	58,622	47,185
Less: Accumulated depreciation and amortization	(19,222)	(16,304)
Property and equipment, net	$ 39,400	$ 30,881

Depreciation and amortization expense for property and equipment for the three months ended March 31, 2021 and 2020 was $1.5 million and $0.9 million, respectively. Depreciation and amortization expense for property and equipment for the six months ended March 31, 2021 and 2020 was $2.9 million and $1.8 million, respectively.

NOTE 4. ***INVESTMENTS***

Investments at March 31, 2021 primarily consisted of corporate bonds that have maturities of less than 36 months and marketable equity securities. The Company's corporate bonds consist of both short-term and long-term bonds and are classified as "held-to-maturity" on the Company's Consolidated Balance Sheets. The Company's marketable equity securities consist of mutual funds that primarily invest in U.S. government bonds, U.S. government agency bonds, corporate bonds and other asset-backed debt securities. Dividends from these funds are automatically reinvested. The Company may also invest excess cash balances in certificates of deposits, money market accounts, government-sponsored enterprise securities, corporate bonds and/or commercial paper. The Company accounts for its held to maturity investments in accordance with FASB ASC 320, Investments – Debt and Equity Securities and its marketable equity securities in accordance with ASC 321, Investments – Equity Securities.

The following tables summarize the Company's short-term and long-term investments and marketable securities as of March 31, 2021 and September 30, 2020 by measurement category.

Held to Maturity

	As of March 31, 2021			
	(In thousands)			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Commercial notes (due within one year)	$ 79,148	$ 887	$ -	$ 80,035
Commercial notes (due within one through three years)	$ 97,490	$ 2,655	$ (66)	$ 100,079
Total	$ 176,638	$ 3,542	$ (66)	$ 180,114

	As of September 30, 2020			
	(In thousands)			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Commercial notes (due within one year)	$ 86,890	$ 1,590	$ -	$ 88,480
Commercial notes (due within one through three years)	$ 137,487	$ 4,573	$ (79)	$ 141,981
Total	$ 224,377	$ 6,163	$ (79)	$ 230,461

Fair Value

	As of March 31, 2021				
			(In thousands)		
	Cost	Realized Gains/(Losses)	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Marketable securities	$ 125,000	$ 1,079	$ 205	$ (491)	$ 125,793
Total	$ 125,000	$ 1,079	$ 205	$ (491)	$ 125,793

	As of September 30, 2020				
			(In thousands)		
	Cost	Realized Gains/(Losses)	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Marketable securities	$ 85,000	$ 95	$ -	$ (75)	$ 85,020
Total	$ 85,000	$ 95	$ -	$ (75)	$ 85,020

Realized gains for marketable securities recorded at fair value consist of dividends received and re-invested into the associated fund.

NOTE 5. ***INTANGIBLE ASSETS***

Intangible assets subject to amortization include patents and a license agreement capitalized as part of the Novartis RNAi asset acquisition in March 2015. The license agreement associated with the Novartis RNAi asset acquisition is being amortized over the estimated life remaining at the time of acquisition, which was 21 years, and the accumulated amortization of the asset is $0.9 million. The patents associated with the Novartis RNAi asset acquisition are being amortized over the estimated life remaining at the time of acquisition, which was 14 years, and the accumulated amortization of the assets is $9.4 million. Amortization expense for the three months ended March 31, 2021 and 2020 was $0.4 million and $0.4 million, respectively. Amortization expense for the six months ended March 31, 2021 and 2020 was $0.9 million and $0.9 million, respectively. Amortization expense is expected to be $0.9 million for the remainder of 2021, $1.7 million in 2022, $1.7 million in 2023, $1.7 million in 2024, $1.7 million in 2025 and $6.8 million thereafter.

The following table provides details on the Company's intangible asset balances:

	Intangible assets subject to amortization
	(in thousands)
Balance at September 30, 2020	$ 15,363
Impairment	-
Amortization	(850)
Balance at March 31, 2021	$ 14,513

NOTE 6. ***STOCKHOLDERS' EQUITY***

At March 31, 2021, the Company had a total of 150,000,000 shares of capital stock authorized for issuance, consisting of 145,000,000 shares of Common Stock, par value $0.001 per share, and 5,000,000 shares of Preferred Stock, par value $0.001 per share.

At March 31, 2021, 104,019,546 shares of Common Stock were outstanding. At March 31, 2021, 16,819,225 shares of Common Stock were reserved for issuance upon exercise of options and vesting of restricted stock units granted or available for grant under Arrowhead's 2004 Equity Incentive Plan, 2013 Incentive Plan, and 2021 Incentive Plan, as well as for inducement grants made to new employees.

NOTE 7. ***COMMITMENTS AND CONTINGENCIES***

Litigation

From time to time, the Company may be subject to various claims and legal proceedings in the ordinary course of business. If the potential loss from any claim, asserted or unasserted, or legal proceeding is considered probable and the amount is reasonably estimable, the Company will accrue a liability for the estimated loss. There were no contingent liabilities recorded as of the six months ended March 31, 2021.

Purchase Commitments

In the normal course of business, the Company enters into various purchase commitments for the manufacture of drug components, for toxicology studies and for clinical studies. As of March 31, 2021, these future commitments were estimated at approximately $136.0 million, of which approximately $78.0 million is expected to be incurred during the remainder of fiscal year 2021.

Technology License Commitments

The Company has licensed from third parties the rights to use certain technologies for its research and development activities, as well as in any products the Company may develop using these licensed technologies. These agreements and other similar agreements often require milestone and royalty payments. Milestone payments, for example, may be required as the research and development process progresses through various stages of development, such as when clinical candidates enter or progress through clinical trials, upon a new drug application and upon certain sales level milestones. These milestone payments could amount to the mid to upper double-digit millions of dollars. During the three and six months ended March 31, 2021, the Company did not reach any milestones. During the three and six months ended March 31, 2020, the Company accrued a $0.9 million milestone payment related to the progression of the ARO-ENaC program. In certain agreements, the Company may be required to make mid to high single-digit percentage royalty payments based on a percentage of the sales of the relevant products.

NOTE 8. ***LEASES***

Leases

In April 2019, the Company entered into a lease for its corporate headquarters in Pasadena, California. The 91 month office building lease between the Company and 177 Colorado Owner, LLC is for approximately 24,000 square feet of office space located at 177 E. Colorado Blvd, Pasadena, California. The increased capacity of this new office space compared to the Company's prior corporate headquarters will accommodate increased personnel as the Company's pipeline of drug candidates expands and moves closer to market. Lease payments began on September 30, 2019 and are estimated to total approximately $8.7 million over the term. The lease expires on April 30, 2027. The Company has paid approximately $3.5 million for leasehold improvements, net of tenant improvement allowances. The lease contains an option to renew for one additional term of five years. The exercise of this option was not determined to be reasonably certain and thus was not included in lease liabilities on the Company's Consolidated Balance Sheet at March 31, 2021. On October 23, 2020, the Company entered into a lease expansion to add an additional approximately 24,000 square feet of office space at the same location for its corporate headquarters. The lease commencement date is expected to be in June 2021, after certain leasehold improvements are completed, and the lease expires in April 2027. The lease payments for the expansion are expected to total $6.9 million. The Company anticipates paying approximately $4.2 million of leasehold improvements, net of tenant improvement allowances. The increased capacity of this additional office space compared to the Company's current corporate headquarters will accommodate increased personnel as the Company's pipeline of drug candidates expands and moves closer to market.

In January 2016, the Company entered into a lease for its research facility in Madison, Wisconsin. The lease was for approximately 60,000 square feet of office and laboratory space and had an expiration date of September 30, 2026. The lease was amended in January 2019 and May 2020 to expand the rentable square feet by an additional 40,000 total square feet and extend the lease expiration date to September 30, 2031. Lease payments are estimated to total approximately $26.2 million for the term. The Company anticipates paying approximately $11.0 million of leasehold improvements for the additional 40,000 square feet, net of tenant improvement allowances. The lease contains two options to renew for two additional terms of five years. The exercise of these options were not determined to be reasonably certain and thus was not included in lease liabilities on the Company's Consolidated Balance Sheet at March 31, 2021. In November 2020 and December 2020, the Company entered into amendments to expand the rentable square space by an additional 10,743 square feet and these amendments added a total of approximately $1.2 million of lease payments for the remainder of the term.

In March 2020, the Company entered into a sublease agreement (the "Sublease") with Halozyme, Inc. for additional research and development facility space in San Diego, California. The Sublease provides additional space needed to accommodate the recent growth of the Company's personnel and discovery efforts. The Sublease is for approximately 21,000 rentable square feet. The term of the Sublease commenced on April 1, 2020 and will end on January 14, 2023. Sublease payments are estimated to total approximately $2.0 million over the term.

Operating lease cost during the three months ended March 31, 2021 and 2020 was $1.1 million and $0.5 million, respectively. Operating lease cost during the six months ended March 31, 2021 and 2020 was $2.0 million and $0.9 million, respectively. Variable lease costs for the three months ended March 31, 2021 and 2020 was $0.2 million and $0.2 million, respectively. Variable lease costs for the six months ended March 31, 2021 and 2020 was $0.5 million and $0.3 million, respectively. There was no short-term lease cost during the three and six months ended March 31, 2021 and 2020.

The following table presents maturities of operating lease liabilities on an undiscounted basis as of March 31, 2021:

	(in thousands)
2021 (remainder of fiscal year)	$ 1,740
2022	4,522
2023	4,624
2024	4,523
2025	4,649
2026 and thereafter	17,421
Total	$ 37,479
Less imputed interest	$ (13,679)
Total operating lease liabilities (includes current portion)	$ 23,800

Cash paid for the amounts included in the measurement of the operating lease liabilities on the Company's Consolidated Balance Sheet and included in Other changes in operating assets and liabilities within cash flows from operating activities on the Company's Consolidated Statement of Cash Flow for the six months ended March 31, 2021 and 2020 was $1.4 million and $0.6 million, respectively. The weighted-average remaining lease term and weighted-average discount rate for all leases as of March 31, 2021 was 8.5 years and 8.5%, respectively.

NOTE 9. ***STOCK-BASED COMPENSATION***

Arrowhead has three plans that provide for equity-based compensation. Under the 2004 Equity Incentive Plan and the 2013 Incentive Plan, as of March 31, 2021, 468,993 and 6,593,291 shares, respectively, of Arrowhead's Common Stock are reserved for the grant of stock options, stock appreciation rights, restricted stock awards and performance unit/share awards to employees, consultants and others. No further grants may be made under the 2004 Equity Incentive Plan. As of March 31, 2021, there were options granted and outstanding to purchase 468,993 and 2,229,852 shares of Common Stock under the 2004 Equity Incentive Plan and the 2013 Incentive Plan, respectively, and there were 3,177,950 restricted stock units granted and outstanding under the 2013 Incentive Plan. Also, as of March 31, 2021, there were 1,080,741 shares reserved for options and 676,200 shares reserved for restricted stock units issued as inducement grants to new employees outside of equity compensation plans. On March 18, 2021, the Company's stockholders approved the Arrowhead Pharmaceuticals, Inc. 2021 Incentive Plan ("2021 Incentive Plan"), which authorizes 8,000,000 shares (subject to certain adjustments) to be awarded for grants of stock options, stock appreciation rights, restricted and unrestricted stock and stock units, performance awards, cash awards and other awards convertible into or otherwise based on shares of Arrowhead's Common Stock. The maximum number of shares authorized under the 2021 Incentive Plan will be (i) reduced by any shares subject to awards made under the 2013 Incentive Plan after January 1, 2021, and (ii) increased by any shares subject to outstanding awards under the 2013 Incentive Plan as of January 1, 2021 that, after January 1, 2021, are canceled, expired, forfeited or otherwise not issued under such awards (other than as a result of being tendered or withheld to pay the exercise price or withholding taxes in connection with any such awards) or settled in cash. As of March 31, 2021, there had been no adjustments to the 8,000,000 authorized shares under the 2021 Incentive Plan, and 0 shares of Arrowhead's Common Stock had been granted under the 2021 Incentive Plan.

The following table summarizes information about stock options:

	Number of Options Outstanding	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Term	Aggregate Intrinsic Value
Balance at September 30, 2020	4,539,403	$ 16.67		
Granted	168,000	65.41		
Cancelled	(108,149)	28.85		
Exercised	(819,668)	9.44		
Balance at March 31, 2021	3,779,586	$ 20.06	6.1 years	$175,292,764
Exercisable at March 31, 2021	2,426,786	$ 10.64	4.8 years	$135,141,412

Stock-based compensation expense related to stock options for the three months ended March 31, 2021 and 2020 was $3.3 million and $2.5 million, respectively. Stock-based compensation expense related to stock options for the six months ended March 31, 2021 and 2020 was $6.4 million and $4.1 million, respectively. For non-qualified stock options, the expense creates a timing difference, resulting in a deferred tax asset, which is fully reserved by a valuation allowance.

The grant date fair value of the options granted by the Company for the three months ended March 31, 2021 and 2020 was $1.4 million and $18.0 million, respectively. The grant date fair value of the options granted by the Company for the six months ended March 31, 2021 and 2020 was $8.1 million and $26.6 million, respectively.

The intrinsic value of the options exercised during the three months ended March 31, 2021 and 2020 was $20.9 million and $8.6 million, respectively. The intrinsic value of the options exercised during the six months ended March 31, 2021 and 2020 was $52.8 million and $30.2 million, respectively.

As of March 31, 2021, the pre-tax compensation expense for all outstanding unvested stock options in the amount of $35.7 million will be recognized in the Company's results of operations over a weighted average period of 2.9 years.

The fair value of each stock option award is estimated on the date of grant using the Black-Scholes option pricing model. The Black-Scholes option valuation model was developed for use in estimating the fair value of traded options, which do not have vesting restrictions and are fully transferable. The determination of the fair value of each stock option is affected by the Company's stock price on the date of grant, as well as assumptions regarding a number of highly complex and subjective variables. Because the Company's employee stock options have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in management's opinion, the existing models do not necessarily provide a reliable single measure of the fair value of its employee stock options.

The assumptions used to value stock options are as follows:

	Six Months Ended March 31,	
	2021	2020
Dividend yield	-	-
Risk-free interest rate	0.4 – 0.6%	0.5-1.8%
Volatility	86.6 – 90.4%	90.5 – 91.8%
Expected life (in years)	6.25	6.25
Weighted average grant date fair value per share of options granted	$ 48.62	$ 40.70

The dividend yield is zero as the Company currently does not pay a dividend.

The risk-free interest rate is based on that of the U.S. Treasury bond.

Volatility is estimated based on volatility average of the Company's Common Stock price.

Restricted Stock Units

Restricted stock units ("RSUs"), including time-based and performance-based awards, were granted under the Company's 2013 Incentive Plan and as inducements grants granted outside of the Company's equity-based compensation plans. During the three months ended March 31, 2021, the Company issued 1,324,750 RSUs under the 2013 Incentive Plan and 0 RSUs as inducement awards. During the six months ended March 31, 2021, the Company issued 1,326,950 RSUs under the 2013 Incentive Plan and 116,000 RSUs as inducement awards. At vesting, each outstanding RSU will be exchanged for one share of the Company's Common Stock. RSU awards generally vest subject to the satisfaction of service requirements or the satisfaction of both service requirements and achievement of certain performance targets.

The following table summarizes the activity of the Company's RSUs:

	Number of RSUs	Weighted-Average Grant Date Fair Value
Unvested at September 30, 2020	3,524,025	$ 44.11
Granted	1,442,950	75.54
Vested	(823,575)	30.11
Forfeited	(289,250)	39.14
Unvested at March 31, 2021	3,854,150	$ 59.24

During the three months ended March 31, 2021 and 2020, the Company recorded $12.1 million and $10.4 million of expense related to RSUs, respectively. During the six months ended March 31, 2021 and 2020, the Company recorded $17.1 million and $13.3 million of expense related to RSUs, respectively. Such expense is included in stock-based compensation expense in the Company's Consolidated Statement of Operations and Comprehensive Income (Loss). For RSUs, the expense creates a timing difference, resulting in a deferred tax asset, which is fully reserved by a valuation allowance.

For RSUs, the grant date fair value of the award is based on the Company's closing stock price at the grant date, with consideration given to the probability of achieving performance conditions for performance-based awards. The grant date fair value of the RSUs granted by the Company for the three months ended March 31, 2021 and 2020 was $101.6 million and $122.0 million, respectively. The grant date fair value of the RSUs granted by the Company for the six months ended March 31, 2021 and 2020 was $109.0 million and $136.0 million, respectively.

As of March 31, 2021, the pre-tax compensation expense for all unvested RSUs in the amount of $131.4 million will be recognized in the Company's results of operations over a weighted average period of 3.1 years. Unvested RSUs that we have deemed not probable of vesting as of March 31, 2021, have the potential of generating an additional $76.4 million of pre-tax compensation expense if we deem them probable of vesting in a future reporting period.

NOTE 10. *FAIR VALUE MEASUREMENTS*

The Company measures its financial assets and liabilities at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (i.e., exit price) in an orderly transaction between market participants at the measurement date. Additionally, the Company is required to provide disclosure and categorize assets and liabilities measured at fair value into one of three different levels depending on the assumptions (i.e., inputs) used in the valuation. Level 1 provides the most reliable measure of fair value while Level 3 generally requires significant management judgment. Financial assets and liabilities are classified in their entirety based on the lowest level of input significant to the fair value measurement. The fair value hierarchy is defined as follows:

Level 1—Valuations are based on unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2—Valuations are based on quoted prices for similar assets or liabilities in active markets, or quoted prices in markets that are not active for which significant inputs are observable, either directly or indirectly.

Level 3—Valuations are based on prices or valuation techniques that require inputs that are both unobservable and significant to the overall fair value measurement. Inputs reflect management's best estimate of what market participants would use in valuing the asset or liability at the measurement date.

The following table summarizes fair value measurements at March 31, 2021 and September 30, 2020 for assets and liabilities measured at fair value on a recurring basis.

March 31, 2021

	Level 1	Level 2	Level 3	Total
	(in thousands)			
Cash and cash equivalents	$ 372,377	$ -	$ -	$ 372,377
Marketable securities	$ 125,793	$ -	$ -	$ 125,793
Short-term investments (held to maturity)	$ -	$ 80,035	$ -	$ 80,035
Long-term investments (held to maturity)	$ -	$ 100,079	$ -	$ 100,079
Contingent consideration	$ -	$ -	$ -	$ -

September 30, 2020:

	Level 1	Level 2	Level 3	Total
	(in thousands)			
Cash and cash equivalents	$ 143,583	$ -	$ -	$ 143,583
Marketable securities	$ 85,020	$ -	$ -	$ 85,020
Short-term investments (held to maturity)	$ -	$ 88,480	$ -	$ 88,480
Long-term investments (held to maturity)	$ -	$ 141,981	$ -	$ 141,981
Contingent consideration	$ -	$ -	$ -	$ -

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Quarterly Report on Form 10-Q contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, and we intend that such forward-looking statements be subject to the safe harbors created thereby. For this purpose, any statements contained in this Quarterly Report on Form 10-Q except for historical information may be deemed to be forward-looking statements. Without limiting the generality of the foregoing, words such as "may," "will," "expect," "believe," "anticipate," "intend," "plan," "project," "could," "estimate," or "continue" or the negative or other variations thereof or comparable terminology are intended to identify forward-looking statements. In addition, any statements that refer to projections of our future financial performance, trends in our businesses, or other characterizations of future events or circumstances are forward-looking statements.

The forward-looking statements included herein are based on current expectations of our management based on available information and involve a number of risks and uncertainties, all of which are difficult or impossible to predict accurately and many of which are beyond our control. In addition, many of these risks and uncertainties may be exacerbated by the COVID-19 pandemic and any worsening of the global business and economic environment as a result. As such, our actual results may differ materially from those expressed in any forward-looking statements. Readers should carefully review the factors identified in our most recent Annual Report on Form 10-K under the caption "Risk Factors" as well as the additional risks and uncertainties described in other documents we file from time to time with the Securities and Exchange Commission ("SEC"), including our Quarterly Report on Form 10-Q for the quarter ended December 31, 2020, this Quarterly Report on Form 10-Q and subsequent quarterly reports on Form 10-Q. In light of the significant risks and uncertainties inherent in the forward-looking information included herein, the inclusion of such information should not be regarded as a representation by us or any other person that such results will be achieved, and readers are cautioned not to place undue reliance on such forward-looking information. Except as may be required by law, we disclaim any intent to revise the forward-looking statements contained herein to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

Description of Business

Unless otherwise noted, (1) the term "Arrowhead" refers to Arrowhead Pharmaceuticals, Inc., a Delaware corporation and its Subsidiaries, (2) the terms "Company," "we," "us," and "our," refer to the ongoing business operations of Arrowhead and its Subsidiaries, whether conducted through Arrowhead or a subsidiary of Arrowhead, (3) the term "Subsidiaries" refers to Arrowhead Madison Inc. ("Arrowhead Madison") and Arrowhead Australia Pty Ltd ("Arrowhead Australia"), (4) the term "Common Stock" refers to Arrowhead's Common Stock, (5) the term "Preferred Stock" refers to Arrowhead's Preferred Stock and (6) the term "Stockholder(s)" refers to the holders of Arrowhead Common Stock.

Overview

Arrowhead Pharmaceuticals, Inc. develops medicines that treat intractable diseases by silencing the genes that cause them. Using a broad portfolio of RNA chemistries and efficient modes of delivery, Arrowhead therapies trigger the RNA interference mechanism to induce rapid, deep and durable knockdown of target genes. RNA interference ("RNAi") is a mechanism present in living cells that inhibits the expression of a specific gene, thereby affecting the production of a specific protein. Arrowhead's RNAi-based therapeutics leverage this natural pathway of gene silencing. The Company's pipeline includes ARO-APOC3 for hypertriglyceridemia, ARO-ANG3 for dyslipidemia, ARO-HSD for liver disease, ARO-ENaC for cystic fibrosis, ARO-HIF2 for renal cell carcinoma, ARO-DUX4 for facioscapulohumeral muscular dystrophy, ARO-LUNG2 for chronic obstructive pulmonary disorder ("COPD"), and ARO-COV for the coronavirus that causes COVID-19 and other possible future pulmonary-borne pathogens. ARO-JNJ1, ARO-JNJ2 and ARO-JNJ3 are being developed for undisclosed liver-expressed targets under a collaboration agreement with Janssen Pharmaceuticals, Inc. ("Janssen"). ARO-AAT for liver disease associated with alpha-1 antitrypsin deficiency ("AATD") was out-licensed to Takeda Pharmaceuticals U.S.A., Inc. ("Takeda") in October 2020. JNJ3989 (formerly referred to as ARO-HBV) for chronic hepatitis B virus was out-licensed to Janssen in October 2018. Olpasiran (formerly referred to as AMG 890 or ARO-LPA) for cardiovascular disease was out-licensed to Amgen Inc. ("Amgen") in 2016.

Arrowhead operates lab facilities in Madison, Wisconsin and San Diego, California, where the Company's research and development activities, including the development of RNAi therapeutics, take place. The Company's principal executive offices are located in Pasadena, California.

Arrowhead has focused its resources on therapeutics that exclusively utilize the Company's Targeted RNAi Molecule (TRiM™) platform technology. Therapeutics built on the TRiM™ platform have demonstrated high levels of pharmacologic activity in multiple animal models spanning several therapeutic areas. TRiM™ enabled therapeutics offer several potential advantages over prior generation and competing technologies, including: simplified manufacturing and reduced costs; multiple routes of administration including subcutaneous injection and inhaled administration; the ability to target multiple tissue types including liver, lung and tumors; and the potential for improved safety and reduced risk of intracellular buildup, because there are less metabolites from smaller, simpler molecules.

During the first half of fiscal year 2021, the Company continued to develop its pipeline and partnered candidates. The Company hosted a key opinion leader webinar on its cardiometabolic candidates, ARO-APOC3 and ARO-ANG3. The Company presented positive interim clinical data from AROAAT2002, an open-label Phase 2 clinical study of ARO-AAT, the Company's second-generation investigational RNAi therapeutic being developed as a treatment for the rare genetic liver disease associated with AATD. The Company also announced positive clinical data on its cardiometabolic candidates, ARO-APOC3 and ARO-ANG3, at the American Heart Association Scientific Sessions 2020. The Company filed two Investigational New Drug Applications with the United States Food and Drug Administration to begin a Phase 2b clinical study of ARO-APOC3 in patients with severe hypertriglyceridemia and a Phase 2b clinical study of ARO-ANG3 in patients with mixed dyslipidemia. Finally, the Company announced a collaboration with Takeda to co-develop and co-commercialize ARO-AAT for alpha-1 antitrypsin-associated liver disease. See Note 2 of the Notes to Consolidated Financial Statements included in this Quarterly Report on Form 10-Q for more information regarding the collaboration with Takeda.

The Company's partnered candidates under its collaboration agreements also continued to progress. Janssen began dosing patients in a Phase 2b triple combination study called REEF-1, designed to enroll up to 450 patients with chronic hepatitis B infection. In connection with the start of this study, Arrowhead earned a $25.0 million milestone payment under the Company's License Agreement with Janssen ("Janssen License Agreement"). The Company is currently performing discovery, optimization and preclinical research and development for ARO-JNJ1, ARO-JNJ2 and ARO-JNJ3 for Janssen as part of the Company's Research Collaboration and Option Agreement with Janssen ("Janssen Collaboration Agreement"). Under the terms of the Janssen agreements taken together, the Company has received $175.0 million as an upfront payment, $75.0 million in the form of an equity investment by Johnson & Johnson Innovation-JJDC, Inc. ("JJDC") in Arrowhead Common Stock, two $25.0 million milestone payments and may receive up to $1.6 billion in development and sales milestones payments for the Janssen License Agreement, and up to $1.9 billion in development and sales milestone payments for the three additional targets covered under the Janssen Collaboration Agreement. The Company is further eligible to receive tiered royalties on product sales up to mid-teens under the Janssen License Agreement and up to low teens under the Janssen Collaboration Agreement.

The Company's collaboration agreement with Amgen for Olpasiran (previously referred to as AMG 890 or ARO-LPA) (the "Second Collaboration and License Agreement" or "Olpasiran Agreement") continues to progress. In July 2020, Amgen initiated a Phase 2 clinical study, which resulted in a $20.0 million milestone payment to the Company. The Company has received $35.0 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock, $30.0 million in milestone payments, and may receive up to an additional $400.0 million in remaining development, regulatory and sales milestone payments. The Company is eligible to receive up to low double-digit royalties for sales of products under the Olpasiran Agreement.

On October 7, 2020, the Company entered into an Exclusive License and Co-Funding Agreement with Takeda (the "Takeda License Agreement"). Under the Takeda License Agreement, Takeda and the Company will co-develop the Company's ARO-AAT program. Within the United States, ARO-AAT, if approved, will be co-commercialized under a 50/50 profit sharing structure. Outside the United States, Takeda will lead the global commercialization strategy and receive an exclusive license to commercialize ARO-AAT with the Company eligible to receive tiered royalties of 20% to 25% on net sales. In January 2021, the Company received $300.0 million as an upfront payment and is eligible to receive potential development, regulatory and commercial milestones of up to $740.0 million.

The revenue recognition for these collaboration agreements is discussed further in Note 2 of the Notes to Consolidated Financial Statements of Part I, Item 1. *Financial Statements* of this Quarterly Report on Form 10-Q.

The Company continues to develop other clinical candidates for future clinical trials. Clinical candidates are tested internally and through GLP toxicology studies at outside laboratories. Drug materials for such studies and clinical trials are either contracted to third-party manufactures or manufactured internally. The Company engages third-party contract research organizations ("CROs") to manage clinical trials and works cooperatively with such organizations on all aspects of clinical trial management, including plan design, patient recruiting, and follow up. These outside costs, relating to the preparation for and administration of clinical trials, are referred to as "candidate costs." If the clinical candidates progress through human testing, candidate costs will increase.

The Company is actively monitoring the ongoing COVID-19 pandemic. The financial results for the three and six months ended March 31, 2021 were not significantly impacted by COVID-19. During fiscal year 2020, the Company had temporarily paused enrollment in its two ARO-AAT studies, SEQUOIA and the ARO-AAT 2002 study, but resumed the process of screening and enrolling patients. During the pause in enrollment, patients already enrolled in these studies continued to be dosed per protocol and continued to come in for their follow up visits. Additional delays have occurred in the Company's earlier stage programs, but the Company does not expect a material impact to any program's anticipated timelines. Additionally, the Company's operations at its research and development facilities in Madison, Wisconsin and San Diego, California, and its corporate headquarters in Pasadena, California have continued to operate with limited impact, other than for enhanced safety measures, including work from home policies. However, the Company cannot predict the impact the progression of COVID-19 will have on future financial results due to a variety of factors including the ability of the Company's clinical sites to continue to enroll subjects, the ability of the Company's suppliers to continue to operate, the continued good health and safety of the Company's employees, and ultimately the length and severity of the COVID-19 pandemic.

Net losses were $26.8 million for the three months ended March 31, 2021 as compared to net losses of $19.8 million for the three months ended March 31, 2020. Net losses were $47.6 million for the six months ended March 31, 2021 as compared to net losses of $22.5 million for the six months ended March 31, 2020. Net losses per share-diluted were $0.26 for the three months ended March 31, 2021 as compared to net losses per share-diluted of $0.20 for the three months ended March 31, 2020. Net losses per share-diluted were $0.46 for the six months ended March 31, 2021 as compared to net losses per share-diluted of $0.23 for the six months ended March 31, 2020. The increase in net losses for the three and six months ended March 31, 2021 was due to an increase in research and development expenses as the Company's pipeline of candidates has expanded and progressed through clinical trial phases, partially offset by an increase in revenue from the Company's license and collaboration agreements, primarily from the Takeda collaboration.

The Company has strengthened its liquidity and financial position through upfront and milestone payments received under its collaboration agreements, as well as equity financings. Under the terms of the Company's agreements with Janssen taken together, the Company has received $175.0 million as an upfront payment, $75.0 million in the form of an equity investment by JJDC in Arrowhead Common Stock and two $25.0 million milestone payments. Under the terms of the Company's agreements with Amgen, the Company has received $35.0 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock and $30.0 million in milestone payments. The Company's October 2020 licensing agreement with Takeda resulted in a $300.0 million upfront payment, which was collected in the beginning of the second quarter of 2021. The Company had $372.4 million of cash and cash equivalents, $125.8 million of marketable securities, $79.1 million in short-term investments, $97.5 million of long term investments and $756.8 million of total assets as of March 31, 2021, as compared to $143.6 million, $85.0 million, $86.9 million, $137.5 million and $522.5 million as of September 30, 2020, respectively. Based upon the Company's current cash and investment resources and operating plan, the Company expects to have sufficient liquidity to fund operations for at least the next twelve months.

Critical Accounting Policies and Estimates

There have been no changes to the significant accounting policies disclosed in the Company's most recent Annual Report on Form 10-K.

Results of Operations

The following data summarizes our results of operations for the following periods indicated:

	Three Months Ended March 31,	
	2021	2020
	(in thousands, except per share amounts)	
Revenues	$ 32,811	$ 23,529
Operating Income (loss)	$ (28,232)	$ (22,240)
Net Income (loss)	$ (26,818)	$ (19,836)
Net Income (Loss) per Share-Diluted	$ (0.26)	$ (0.20)

	Six Months Ended March 31,	
	2021	2020
	(in thousands, except per share amounts)	
Revenues	$ 54,113	$ 52,983
Operating Income (loss)	$ (52,285)	$ (27,094)
Net Income (loss)	$ (47,550)	$ (22,509)
Net Income (Loss) per Share-Diluted	$ (0.46)	$ (0.23)

The increase in revenue for the three and six months ended March 31, 2021 compared to the three and six months ended March 31, 2020 was driven by the revenue recognized for the Takeda collaboration. The increase in net losses during the three and six months ended March 31, 2021 compared to the three and six months ended March 31, 2020 was driven by an increase in research and development expenses as our pipeline of clinical candidates has continued to increase and progress through clinical trial phases, partially offset by an increase in revenue from the Takeda License Agreement.

Revenue

Total revenue for the three months ended March 31, 2021 and 2020 was $32.8 million and $23.5 million, respectively. Total revenue for the six months ended March 31, 2021 and 2020 was $54.1 million and $53.0 million, respectively. Revenue for the three

months ended March 31, 2021 is primarily related to the recognition of $25.4 million of revenue associated with the Takeda License Agreement and the recognition of a portion of the $252.7 million initial transaction price associated with our agreements with Janssen and JJDC for the progress we achieved towards completing our performance obligations under those agreements. Revenue for the six months ended March 31, 2021 is primarily related to the recognition of $33.6 million of revenue associated with the Takeda License Agreement and the recognition of a portion of the $252.7 million initial transaction price associated with our agreements with Janssen and JJDC for the progress we achieved towards completing our performance obligations under those agreements.

Amgen Inc.

On September 28, 2016, the Company entered into two collaboration and license agreements and a common stock purchase agreement with Amgen. Under the Second Collaboration and License Agreement or Olpasiran Agreement, Amgen has received a worldwide, exclusive license to Arrowhead's novel, RNAi Olpasiran (previously referred to as AMG 890 or ARO-LPA) program. These RNAi molecules are designed to reduce elevated lipoprotein(a), which is a genetically validated, independent risk factor for atherosclerotic cardiovascular disease. Under the other collaboration and license agreement (the "First Collaboration and License Agreement" or the "ARO-AMG1 Agreement"), Amgen received an option to a worldwide, exclusive license for ARO-AMG1, an RNAi therapy for an undisclosed genetically validated cardiovascular target. In both agreements, Amgen is wholly responsible for clinical development and commercialization. Under the terms of the agreements taken together, the Company has received $35.0 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock, and $30.0 million in milestone payments, and may receive up to an additional $400.0 million in remaining development, regulatory and sales milestone payments. The Company is further eligible to receive up to low double-digit royalties for sales of products under the Olpasiran Agreement. In July 2019, Amgen informed the Company that it would not be exercising its option for an exclusive license for ARO-AMG1, and as such, there will be no further milestone or royalty payments under the ARO-AMG1 Agreement.

The Company substantially completed its performance obligations under the Olpasiran Agreement and the ARO-AMG1 Agreement. Future milestones and royalties achieved will be recognized in their entirety when earned. In July 2020, Amgen initiated a Phase 2 clinical study, which resulted in a $20.0 million milestone payment to the Company. During the three and six months ended March 31, 2021 and 2020, the Company recognized $0 and $0 in revenue, respectively. As of March 31, 2021, there were $0 in contract assets recorded as accounts receivable and $0 of contract liabilities recorded as current deferred revenue on the Company's Consolidated Balance Sheets.

Janssen Pharmaceuticals, Inc.

On October 3, 2018, the Company entered into the Janssen License Agreement and the Janssen Collaboration Agreement with Janssen, part of the Janssen Pharmaceutical Companies of Johnson & Johnson. The Company also entered into a stock purchase agreement with JJDC ("JJDC Stock Purchase Agreement"). Under the Janssen License Agreement, Janssen has received a worldwide, exclusive license to the Company's JNJ-3989 (ARO-HBV) program, the Company's third-generation subcutaneously administered RNAi therapeutic candidate being developed as a potential therapy for patients with chronic hepatitis B virus infection. Beyond the Company's Phase 1/2 study of JNJ-3989 (ARO-HBV), Janssen is also wholly responsible for clinical development and commercialization of JNJ-3989. Under the Janssen Collaboration Agreement, Janssen will be able to select three new targets against which Arrowhead will develop clinical candidates. These candidates are subject to certain restrictions and do not include candidates that already were in the Company's pipeline. The Company will perform discovery, optimization and preclinical research and development, entirely funded by Janssen, which on its own or in combination with Janssen development work, is sufficient to allow the filing of a U.S. Investigational New Drug Application or equivalent, at which time Janssen will have the option to take an exclusive license. If the option is exercised, Janssen will be wholly responsible for clinical development and commercialization of each optioned candidate. Under the terms of the agreements taken together, the Company has received $175.0 million as an upfront payment, $75.0 million in the form of an equity investment by JJDC in Arrowhead Common Stock under the JJDC Stock Purchase Agreement, and two $25.0 million milestone payments, and may receive up to $1.6 billion in development and sales milestones payments for the Janssen License Agreement, and up to $1.9 billion in development and sales milestone payments for the three additional targets covered under the Janssen Collaboration Agreement. The Company is further eligible to receive tiered royalties up to mid-teens under the Janssen License Agreement and up to low teens under the Janssen Collaboration Agreement on product sales.

The Company has evaluated these agreements in accordance with FASB Topic 606 - Revenue for Contracts from Customers, which became effective for the Company on October 1, 2018. At the inception of these agreements, the Company identified one distinct performance obligation. Regarding the Janssen License Agreement, the Company determined that the key deliverables included the license and certain R&D services including the Company's responsibility to complete the Phase 1/2 study of JNJ-3989 (ARO-HBV) and the Company's responsibility to ensure certain manufacturing of JNJ-3989 (ARO-HBV) drug product is completed and delivered to Janssen (the "Janssen R&D Services"). Due to the specialized and unique nature of these Janssen R&D Services and their direct relationship with the license, the Company determined that these deliverables represent one distinct bundle and, thus, one performance obligation. The Company also determined that Janssen's option to require the Company to develop up to three new targets is not a material right and, thus, not a performance obligation at the onset of the agreement. The consideration for this option is accounted for separately.

The Company determined the transaction price totaled approximately $252.7 million which includes the upfront payment, the premium paid by JJDC for its equity investment in the Company, the two $25.0 million milestone payments earned and estimated payments for reimbursable Janssen R&D Services to be performed. The Company has allocated the total $252.7 million initial transaction price to its one distinct performance obligation for the JNJ-3989 (ARO-HBV) license and the associated Janssen R&D Services. This revenue will be recognized using a proportional performance method (based on actual costs incurred versus total estimated costs incurred) beginning in October 2018 and ending as the Company's efforts in overseeing the Phase 1/2 clinical trial are completed. During the three months ended March 31, 2021 and 2020, the Company recognized approximately $7.4 million and $22.2 million of revenue associated with this performance obligation, respectively. During the six months ended March 31, 2021 and 2020, the Company recognized approximately $20.2 million and $50.9 million of revenue associated with this performance obligation, respectively. As of March 31, 2021, there were $0.6 million in contract assets recorded as accounts receivable, and $0 of contract liabilities recorded as current deferred revenue on the Company's Consolidated Balance Sheets.

The Company has begun to conduct its discovery, optimization and preclinical research and development of ARO-JNJ1, ARO-JNJ2 and ARO-JNJ3 under the Janssen Collaboration Agreement. All costs and labor hours spent by the Company will be entirely funded by Janssen. During the three months ended March 31, 2021 and 2020, the Company recognized $0.1 million and $1.4 million of revenue associated with these efforts, respectively. During the six months ended March 31, 2021 and 2020, the Company recognized $0.3 million and $2.1 million of revenue associated with these efforts, respectively. As of March 31, 2021, there were $0.3 million of contract assets recorded as accounts receivable and $0 of contract liabilities recorded as current deferred revenue on the Company's Consolidated Balance Sheets.

Takeda Pharmaceuticals U.S.A., Inc.

On October 7, 2020, the Company entered into the Takeda License Agreement with Takeda. Under the Takeda License Agreement, Takeda and the Company will co-develop the Company's ARO-AAT program, the Company's second-generation subcutaneously administered RNAi therapeutic candidate being developed as a treatment for liver disease associated with alpha-1 antitrypsin deficiency. Within the United States, ARO-AAT, if approved, will be co-commercialized under a 50/50 profit sharing structure. Outside the United States, Takeda will lead the global commercialization strategy and receive an exclusive license to commercialize ARO-AAT with the Company eligible to receive tiered royalties of 20% to 25% on net sales. In January 2021, the Company received $300.0 million as an upfront payment and is eligible to receive potential development, regulatory and commercial milestones of up to $740.0 million.

The Company has evaluated the Takeda License Agreement in accordance with FASB Topic 606 - Revenue for Contracts from Customers, which became effective for the Company on October 1, 2018. At the inception of the Takeda License Agreement, the Company identified one distinct performance obligation. The Company determined that the key deliverables included the license and certain R&D services including the Company's responsibilities to complete the initial portion of the SEQUOIA study, to complete the ongoing Phase 2 AROAAT2002 study and to ensure certain manufacturing of ARO-AAT drug product is completed and delivered to Takeda (the "Takeda R&D Services"). Due to the specialized and unique nature of these Takeda R&D Services and their direct relationship with the license, the Company determined that these deliverables represent one distinct bundle and, thus, one performance obligation. Beyond the Takeda R&D Services, Takeda will be responsible for managing future clinical development and commercialization. The Company will co-fund certain of the development and commercialization costs that Takeda manages, and these co-funding amounts will be offset against amounts owed to Arrowhead, either from milestones or royalties earned, or profits earned under the 50/50 profit sharing structure for U.S. commercialization.

The Company determined the initial transaction price totaled approximately $300.0 million, which includes the upfront payment. The Company will exclude any future estimated milestones, royalties, or profit-sharing payments from this transaction price to date. The Company will allocate the total $300.0 million initial transaction price to its one distinct performance obligation for the ARO-AAT license and the associated Takeda R&D Services. Revenue will be recognized using a proportional performance method (based on actual costs incurred versus total estimated costs incurred for the Takeda R&D Services). Revenue for the three months ended March 31, 2021 and 2020 were $25.4 million and $0, respectively. Revenue for the six months ended March 31, 2021 and 2020 were $33.6 million and $0, respectively. As of March 31, 2021, there were $0 in contract assets recorded as accounts receivable, $144.9 million in contract liabilities recorded as deferred revenue and $121.5 million in contract liabilities recorded as deferred revenue, net of the current portion. See Note 2 to the Notes to Consolidated Financial Statements included in this Quarterly Report on Form 10-Q for more information regarding our collaboration and license agreements.

Operating Expenses

The analysis below details the operating expenses and discusses the expenditures of the Company within the major expense categories. Certain reclassifications have been made to prior-period operating expense categories to conform to the current period presentation. For purposes of comparison, the amounts for the three and six months ended March 31, 2021 and 2020 are shown in the tables below.

Research and Development Expenses

R&D expenses are related to the Company's research and development efforts, and related program costs which are comprised primarily of outsourced costs related to the manufacturing of clinical supplies, toxicity/efficacy studies and clinical trial expenses. Internal costs primarily relate to operations at our research facilities in Madison, Wisconsin and San Diego, California, including facility costs and laboratory-related expenses. Salaries and stock compensation expense consist of salary, bonuses, payroll taxes and related benefits and stock compensation for our R&D personnel. Depreciation and amortization expense relates to depreciation on lab equipment and leasehold improvements at our research facilities. We do not separately track R&D expenses by individual research and development projects, including by individual drug candidates. The Company operates in a cross-functional manner across projects and does not separately allocate facilities-related costs, candidate costs, discovery costs, compensation expenses, depreciation and amortization expenses, and other expenses for research and development activities. The following table provides details of research and development expenses for the periods indicated:

(table below in thousands)

	Three Months Ended March 31, 2021	% of Expense Category	Three Months Ended March 31, 2020	% of Expense Category	Increase (Decrease) $	Increase (Decrease) %
Salaries	$ 8,685	19%	$ 4,216	14%	$ 4,469	106%
Facilities related	1,671	4%	823	3%	848	103%
Candidate costs	20,667	46%	15,716	53%	4,951	32%
R&D discovery costs	5,502	12%	4,516	15%	986	22%
Total research and development expense, excluding non-cash expense	**36,525**	**82%**	**25,271**	**86%**	**11,254**	**45%**
Stock compensation	6,406	14%	2,953	10%	3,453	117%
Depreciation/amortization	1,766	4%	1,219	4%	547	45%
Total research and development expense	**$ 44,697**	**100%**	**$ 29,443**	**100%**	**$ 15,254**	**52%**

	Six Months Ended March 31, 2021	% of Expense Category	Six Months Ended March 31, 2020	% of Expense Category	Increase (Decrease) $	Increase (Decrease) %
Salaries	$ 16,857	21%	$ 8,312	16%	$ 8,545	103%
Facilities related	3,150	4%	1,444	3%	1,706	118%
Candidate costs	35,684	44%	29,145	55%	6,539	22%
R&D discovery costs	10,213	13%	7,471	14%	2,742	37%
Total research and development expense, excluding non-cash expense	**$ 65,904**	**81%**	**$ 46,372**	**88%**	**$ 19,532**	**42%**
Stock compensation	11,891	15%	4,115	8%	7,776	189%
Depreciation/amortization	3,456	4%	2,330	4%	1,126	48%
Total research and development expense	**$ 81,251**	**100%**	**$ 52,817**	**100%**	**$ 28,434**	**54%**

Salaries expense increased by $4,469,000 from $4,216,000 during the three months ended March 31, 2020 to $8,685,000 during the current period. Salaries expense increased by $8,545,000 from $8,312,000 during the six months ended March 31, 2020 to $16,857,000 during the current period. This increase is primarily due to an increase in R&D headcount that has occurred as the Company has expanded its pipeline of candidates.

Facilities expense increased by $848,000 from $823,000 during the three months ended March 31, 2020 to $1,671,000 during the current period. Facilities expense increased by $1,706,000 from $1,444,000 during the six months ended March 31, 2020 to $3,150,000 during the current period. This category includes rental costs for our research and development facilities in Madison, Wisconsin and San Diego, California. This increase is primarily due to the commencement of our sublease in San Diego, California in April 2020.

Candidate costs increased by $4,951,000 from $15,716,000 during the three months ended March 31, 2020 to $20,667,000 during the current period. Candidate costs increased by $6,539,000 from $29,145,000 during the six months ended March 31, 2020 to $35,684,000 during the current period. This increase is primarily due to the progression of our pipeline of candidates into and through clinical trials, which results in higher outsourced clinical trial, toxicity study and manufacturing costs. We anticipate these expenses to continue to increase as our pipeline of candidates grows and progresses to later phase clinical trials.

R&D discovery costs increased by $986,000 from $4,516,000 during the three months ended March 31, 2020 to $5,502,000 in the current period. R&D discovery costs increased by $2,742,000 from $7,471,000 during the six months ended March 31, 2020 to $10,213,000 in the current period. This increase is primarily due to the growth of our discovery efforts, including the addition of our research facility in San Diego. We anticipate this expense to continue to increase as we increase headcount to support our discovery efforts to identify new drug candidates.

Stock compensation expense, a non-cash expense, increased by $3,453,000 from $2,953,000 during the three months ended March 31, 2020 to $6,406,000 during the current period. Stock compensation expense, a non-cash expense, increased by $7,776,000 from $4,115,000 during the six months ended March 31, 2020 to $11,891,000 during the current period. Stock compensation expense is based upon the valuation of stock options and restricted stock units granted to employees, directors and certain consultants. Many variables affect the amount expensed, including the Company's stock price on the date of the grant, as well as other assumptions. The increase in the expense in the current period is primarily due to the increased headcount discussed above and a mix of higher grant date fair values of awards amortizing during the current period due to the Company's stock price at the time of the grants. We generally expect future stock compensation expense to increase as our headcount continues to increase to support our clinical pipeline.

Depreciation and amortization expense, a non-cash expense, increased by $547,000 from $1,219,000 during the three months ended March 31, 2020 to $1,766,000 during the current period. Depreciation and amortization expense, a non-cash expense, increased by $1,126,000 from $2,330,000 during the six months ended March 31, 2020 to $3,456,000 during the current period. The majority of depreciation and amortization expense relates to depreciation on lab equipment and leasehold improvements at our Madison research facility.

General & Administrative Expenses

The following table provides details of our general and administrative expenses for the periods indicated:

(table below in thousands)

	Three Months Ended March 31, 2021	% of Expense Category	Three Months Ended March 31, 2020	% of Expense Category	Increase (Decrease) $	Increase (Decrease) %
Salaries	$ 3,257	20%	$ 3,033	19%	$ 224	7%
Professional/outside services	1,838	11%	1,677	10%	161	10%
Facilities related	787	5%	418	3%	369	88%
Other G&A	1,355	8%	1,026	6%	329	32%
Total general & administrative expense, excluding non-cash expense	**7,237**	**44%**	**6,154**	**38%**	**1,083**	**137%**
Stock compensation	8,953	55%	10,019	61%	(1,066)	-11%
Depreciation/amortization	156	1%	153	1%	3	2%
Total general & administrative expense	**$ 16,346**	**100%**	**$ 16,326**	**100%**	**$ 20**	**129%**

	Six Months Ended March 31, 2021	% of Expense Category	Six Months Ended March 31, 2020	% of Expense Category	Increase (Decrease) $	Increase (Decrease) %
Salaries	$ 5,841	23%	$ 7,114	26%	$ (1,273)	-18%
Professional/outside services	3,820	15%	3,499	13%	321	9%
Facilities related	1,517	6%	1,211	4%	306	25%
Other G&A	2,048	8%	1,785	7%	263	15%
Total general & administrative expense, excluding non-cash expense	**$ 13,226**	**52%**	**$ 13,609**	**50%**	**$ (383)**	**-3%**
Stock compensation	11,611	46%	13,349	49%	(1,738)	-13%
Depreciation/amortization	310	2%	302	1%	8	3%
Total general & administrative expense	**$ 25,147**	**100%**	**$ 27,260**	**100%**	**$ (2,113)**	**-8%**

Salaries expense increased by $224,000 from $3,033,000 during the three months ended March 31, 2020 to $3,257,000 during the current period. Salaries expense decreased by $1,273,000 from $7,114,000 during the six months ended March 31, 2020 to $5,841,000 during the current period. The increase of $224,000 during the three months ended March 31, 2021 as compared to the three months ended March 31, 2020 is due to an increase in headcount. The decrease of $1,273,000 during the six months ended March 31, 2021 as compared to the six months ended March 31, 2020 is primarily due to higher annual performance bonuses awarded in December 2019. We expect salaries expense to increase as our headcount continues to increase to support our expanding clinical pipeline.

Professional/outside services include legal, accounting, consulting, patent expenses, business insurance expenses and other outside services retained by the Company. Professional/outside services expense increased by $161,000 from $1,677,000 during the three months ended March 31, 2020 to $1,838,000 during the current period. Professional/outside services expense increased by $321,000 from $3,499,000 during the six months ended March 31, 2020 to $3,820,000 during the current period. The increase is primarily related to increased consulting costs.

Facilities-related expense increased by $369,000 from $418,000 during the three months ended March 31, 2020 to $787,000 during the current period. Facilities-related expense increased by $306,000 from $1,211,000 during the six months ended March 31, 2020 to $1,517,000 during the current period. This category primarily includes rental costs for our corporate headquarters in Pasadena, California. The increase is due to increased communication and technology costs as the Company's headcount continues to grow.

Other G&A expense increased by $329,000 from $1,026,000 during the three months ended March 31, 2020 to $1,355,000 during the current period. Other G&A expense increased by $263,000 from $1,785,000 during the six months ended March 31, 2020 to $2,048,000 during the current period. This category consists primarily of travel, communication and technology, office expenses, and franchise and property tax expenses. The increase is due to an increase in headcount at the Company's corporate headquarters.

Stock compensation expense, a non-cash expense, decreased by $1,066,000 from $10,019,000 during the three months ended March 31, 2020 to $8,953,000 during the current period. Stock compensation expense, a non-cash expense, decreased by $1,738,000 from $13,349,000 during the six months ended March 31, 2020 to $11,611,000 during the current period. Stock compensation expense is based upon the valuation of stock options and restricted stock units granted to employees, directors and certain consultants. Many variables affect the amount expensed, including the Company's stock price on the date of the grant, as well as other assumptions. We generally expect future stock compensation expense to increase as our headcount continues to increase to support our clinical pipeline.

Depreciation and amortization expense, a noncash expense, increased by $3,000 from $153,000 during the three months ended March 31, 2020 to $156,000 during the current period. Depreciation and amortization expense, a noncash expense, increased by $8,000 from $302,000 during the six months ended March 31, 2020 to $310,000 during the current period. The increase is primarily related to amortization of leasehold improvements for our corporate headquarters.

Other Income/Expense

Other income/expense was income of $2,405,000 during the three months ended March 31, 2020 compared to income of $1,414,000 during the current period. Other income/expense was income of $4,585,000 during the six months ended March 31, 2020 compared to income of $4,735,000 during the current period. Other income is primarily related to interest income and realized and unrealized gain/loss on our marketable securities.

Liquidity and Capital Resources

Arrowhead has historically financed its operations through the sale of its equity securities. Research and development activities have required significant capital investment since the Company's inception and are expected to continue to require significant cash expenditure in the future.

At March 31, 2021, the Company had cash on hand of approximately $372.4 million as compared to $143.6 million at September 30, 2020. Cash invested in short-term fixed income securities and marketable securities was $204.9 million at March 31, 2021, compared to $171.9 million at September 30, 2020. Cash invested in long-term fixed income securities was $97.5 million at March 31, 2021, compared to $137.5 million at September 30, 2020. The Company also entered into an Open Market Sale Agreement (the "ATM agreement") in August 2020, pursuant to which the Company may, from time to time, sell up to $250,000,000 in shares of the Company's Common Stock through Jefferies LLC. As of March 31, 2021, no shares have been issued under the ATM agreement. The Company believes its current financial resources are sufficient to fund its operations through at least the next twelve months.

A summary of cash flows for the six months ended March 31, 2021 and 2020 is as follows:

	Six Months Ended March 31, 2021	Six Months Ended March 31, 2020
	(in thousands)	
Cash Flow from:		
Operating Activities	224,951	(51,115)
Investing Activities	(3,892)	(168,849)
Financing Activities	7,735	254,811
Net Increase (decrease) in cash and cash equivalents	228,794	34,847
Cash and cash equivalents at beginning of period	143,583	221,804
Cash and cash equivalents at end of period	372,377	256,651

During the six months ended March 31, 2021, cash flow provided by operating activities was $225.0 million, which was primarily due to the $300 million payment received under the Takeda License Agreement, partially offset by ongoing expenses of the Company's research and development programs and general and administrative expenses. Cash used in investing activities was $3.9 million, which was primarily related to the purchase of property and equipment of $11.4 million, partially offset by the net sales of investments of $7.5 million. Cash provided by financing activities of $7.7 million was related to cash received from stock option exercises.

During the six months ended March 31, 2020, the Company used $51.1 million in cash from operating activities, which was primarily related to the ongoing expenses of the Company's research and development programs and general and administrative expenses. Cash used in investing activities was $168.8 million, which was primarily related to the purchase of fixed-income investments of $180.5 million and property and equipment of $7.9 million, partially offset by the maturity of $19.6 million of fixed-income securities. Cash provided by financing activities of $254.8 million was driven by the Company's securities financing in December 2019, which generated $250.5 million in net cash proceeds, as well as $4.3 million in cash received from stock option exercises.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

There has been no material change in our exposure to market risk from that described in Item 7A of our Annual Report on Form 10-K for the year ended September 30, 2020.

ITEM 4. CONTROLS AND PROCEDURES

Our Chief Executive Officer and our Chief Financial Officer, after evaluating our "disclosure controls and procedures" (as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this Quarterly Report on Form 10-Q (the "Evaluation Date"), have concluded that, as of the Evaluation Date, our disclosure controls and procedures are effective to ensure that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and to ensure that information required to be disclosed by us in such reports is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer where appropriate, to allow timely decisions regarding required disclosure.

No change in the Company's internal controls over financial reporting (as defined in Rule 13a-15(f) and 15d-15(f) of the Exchange Act) occurred during the Company's most recent fiscal quarter that has materially affected, or is 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 routine legal proceedings, as well as demands, claims and threatened litigation, which arise in the normal course of our business. Litigation can be expensive and disruptive to normal business operations. Moreover, the results of legal proceedings, particularly complex legal proceedings, cannot be predicted with any certainty. We disclosed information about certain of our legal proceedings in Part I, Item 3 of our Annual Report on Form 10-K for the year ended September 30, 2020.

ITEM 1A. Risk Factors

There have been no material changes to the risk factors included in our Annual Report on Form 10-K for the year ended September 30, 2020. Please carefully consider the information set forth in this Quarterly Report on Form 10-Q and the risk factors discussed in Part I, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the year ended September 30, 2020, which could materially affect our business, financial condition or future results. The risks described in our Annual Report on Form 10-K, as well as other risks and uncertainties, could materially and adversely affect our business, results of operations and financial condition, which in turn could materially and adversely affect the trading price of shares of our Common Stock. Additional risks not currently known or currently material to us may also harm our business.

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

None.

ITEM 6. EXHIBITS

Exhibit Number	Document Description
10.1	Arrowhead Pharmaceuticals, Inc. 2021 Incentive Plan (Incorporated by reference from Exhibit A of the Company's Definitive Proxy Statement on Schedule 14A filed on January 28, 2021)
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002*
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002*
32.1	Certification of Chief 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 Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document*
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document*
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document*
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document*
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document*
104	The cover page from this Quarterly Report on Form 10-Q, formatted in Inline XBRL (included as Exhibit 101)*

* Filed herewith
** Furnished herewith

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this Quarterly Report on Form 10-Q to be signed on its behalf by the undersigned, thereunto duly authorized.

Dated: May 4, 2021

ARROWHEAD PHARMACEUTICALS, INC.

By: /s/ Kenneth A. Myszkowski
Kenneth A. Myszkowski
Chief Financial Officer
(Principal Financial Officer and Duly Authorized Officer)

Exhibit 31.1

CERTIFICATION PURSUANT SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Christopher Anzalone, Chief Executive Officer of Arrowhead Pharmaceuticals, Inc., certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Arrowhead Pharmaceuticals, 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: May 4, 2021

/s/ CHRISTOPHER ANZALONE

Christopher Anzalone
Chief Executive Officer

Exhibit 31.2

CERTIFICATION PURSUANT SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Kenneth A. Myszkowski, Chief Financial Officer of Arrowhead Pharmaceuticals, Inc., certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Arrowhead Pharmaceuticals, 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: May 4, 2021

/s/ Kenneth A. Myszkowski

Kenneth A. Myszkowski,
Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Christopher Anzalone, Chief Executive Officer of Arrowhead Pharmaceuticals, Inc. (the "Company"), certify, pursuant to Rule 13(a)-14(b) or Rule 15(d)-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, that (i) the Quarterly Report on Form 10-Q of the Company for the quarterly period ended March 31, 2021, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and (ii) the information contained in such Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of the Company.

Date: May 4, 2021

/s/ CHRISTOPHER ANZALONE

Christopher Anzalone
Chief Executive Officer

A signed original of these written statements required by 18 U.S.C. Section 1350 has been provided to Arrowhead Pharmaceuticals, Inc. and will be retained by Arrowhead Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

CERTIFICATION PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Kenneth A. Myszkowski, Chief Financial Officer of Arrowhead Pharmaceuticals, Inc. (the "Company"), certify, pursuant to Rule 13(a)-14(b) or Rule 15(d)-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, that (i) the Quarterly Report on Form 10-Q of the Company for the quarterly period ended March 31, 2021, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and (ii) the information contained in such Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of the Company.

Date: May 4, 2021

/s/ Kenneth A. Myszkowski

Kenneth A. Myszkowski
Chief Financial Officer

A signed original of these written statements required by 18 U.S.C. Section 1350 has been provided to Arrowhead Pharmaceuticals, Inc. and will be retained by Arrowhead Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.