ARROWHEAD PHARMACEUTICALS, INC.
Form 10-Q
February 07, 2019

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 December 31, 2018

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.)

225 S. Lake Avenue, Suite 1050

Pasadena, California 91101

(626) 304-3400

(Address and telephone number of principal executive offices)

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post 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		Accelerated filer
Non-accelerated filer	(Do not check if a smaller reporting company)	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 February 6, 2019 was 94,207,393.

PART I. FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

Arrowhead Pharmaceuticals, Inc.

Consolidated Balance Sheets

	(unaudited)	
	December 31, 2018	September 30, 2018
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$189,772,981	$30,133,213
Accounts receivable	3,168,578	327,375
Prepaid expenses	1,550,437	1,267,717
Other current assets	478,310	640,117
Short term investments	53,980,307	46,400,176
TOTAL CURRENT ASSETS	248,950,613	78,768,598
Property and equipment, net	13,920,667	13,935,425
Intangible assets, net	18,338,903	18,764,010
Long term investments	59,595,287	-
Other assets	141,918	141,918
TOTAL ASSETS	$340,947,388	$111,609,951
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable	$3,936,590	$2,806,098
Accrued expenses	3,907,515	5,043,087
Accrued payroll and benefits	1,629,871	3,937,605
Deferred rent	212,159	307,334
Deferred revenue	124,925,638	600
Note Payable	-	223,820
Other current liabilities	-	46,407
TOTAL CURRENT LIABILITIES	134,611,773	12,364,951
LONG-TERM LIABILITIES		
Deferred rent, net of current portion	1,664,182	1,702,801
Deferred revenue, net of current portion	33,171,402	-
Note Payable, net of current portion	-	2,101,198
Other non-current liabilities	-	200,000
TOTAL LONG-TERM LIABILITIES	34,835,584	4,003,999
Commitments and contingencies (Note 7)		
STOCKHOLDERS' EQUITY		
Arrowhead Pharmaceuticals, Inc. stockholders' equity:		
Common stock, $0.001 par value; 145,000,000 shares authorized; 92,591,457 and 88,505,302 shares issued and outstanding as of December 31, 2018 and September 30, 2018, respectively	184,961	180,875
Additional paid-in capital	647,142,565	582,902,694

Accumulated other comprehensive income (loss)	(43,744)	(21,564)
Accumulated deficit	(475,228,563)	(487,265,816)
Total Arrowhead Pharmaceuticals, Inc. stockholders' equity	172,055,219	95,796,189
Noncontrolling interest	(555,188)	(555,188)
TOTAL STOCKHOLDERS’ EQUITY	171,500,031	95,241,001
TOTAL LIABILITIES AND STOCKHOLDERS’ EQUITY	$340,947,388	$111,609,951

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)

	Three Months Ended December 31,	
	2018	2017
REVENUE	$34,657,896	$3,509,821
OPERATING EXPENSES		
Research and development	17,572,043	12,919,618
General and administrative expenses	6,139,709	4,403,551
TOTAL OPERATING EXPENSES	23,711,752	17,323,169
OPERATING INCOME (LOSS)	10,946,144	(13,813,348)
OTHER INCOME (EXPENSE)		
Interest income (expense), net	1,091,109	163,731
Change in value of derivatives	-	450,739
TOTAL OTHER INCOME (EXPENSE)	1,091,109	614,470
INCOME (LOSS) BEFORE INCOME TAXES	12,037,253	(13,198,878)
Provision for income taxes	-	-
NET INCOME (LOSS)	12,037,253	(13,198,878)
NET INCOME (LOSS) PER SHARE - BASIC	$0.13	$(0.18)
NET INCOME (LOSS) PER SHARE - DILUTED	$0.13	$(0.18)
Weighted average shares outstanding - basic	91,091,823	74,831,415
Weighted average shares outstanding - diluted	95,590,183	74,831,415
OTHER COMPREHENSIVE INCOME (LOSS), NET OF TAX:		
Foreign Currency Translation Adjustments	(22,180)	(9,528)
COMPREHENSIVE INCOME (LOSS)	$12,015,073	$(13,208,406)

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

Arrowhead Pharmaceuticals, Inc.

Consolidated Statement of Stockholders' Equity

(unaudited)

	Common Stock	Amount ($)	Additional Paid-In Capital	Accumulated Other Comprehensive Income (loss)	Accumulated Deficit	Non-controlling Interest	Totals
Balance at September 30, 2018	88,505,302	$180,875	$582,902,694	$ (21,564)	$(487,265,816)	$ (555,188)	$95,241,001
Stock-based compensation	-	-	2,717,534	-	-	-	2,717,534
Exercise of stock options	166,327	166	1,004,528	-	-	-	1,004,694
Common stock-Restricted Stock Units vesting	658,959	659	(659)	-	-	-	-
Common stock issued for cash	3,260,869	3,261	60,518,468	-	-	-	60,521,729
Foreign currency translation adjustments	-	-	-	(22,180)	-	-	(22,180)
Net income for the three months ended December 31, 2018	-	-	-	-	12,037,253	-	12,037,253
Balance at December 31, 2018	92,591,457	$184,961	$647,142,565	$ (43,744)	$(475,228,563)	$ (555,188)	$171,500,031

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

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Arrowhead Pharmaceuticals, Inc.

Consolidated Statements of Cash Flows

(unaudited)

	Three Months Ended December 31,	
	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income (loss)	$12,037,253	$(13,198,878)
Change in value of derivatives	-	(450,739)
Stock-based compensation	2,717,534	2,092,541
Depreciation and amortization	1,177,352	1,141,173
Amortization/(accretion) of note premiums	(156,637)	107,783
Changes in operating assets and liabilities:		
Accounts receivable	(2,841,204)	(82,134)
Prepaid expenses and Other Current Assets	(120,912)	(29,223)
Deferred revenue	158,096,440	(3,394,740)
Accounts payable	1,130,491	1,630,533
Accrued expenses	(3,489,712)	(2,550,703)
Other	(265,842)	43,907
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	168,284,763	(14,690,480)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property and equipment	(737,487)	(135,414)
Purchases of marketable securities	(69,271,001)	(5,018,040)
Proceeds from sale of marketable securities	2,252,219	6,510,420
NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES	(67,756,269)	1,356,966
CASH FLOWS FROM FINANCING ACTIVITIES:		
Principal payments on notes payable	(2,415,149)	(197,790)
Proceeds from the exercises of warrants and stock options	1,004,694	224,082
Proceeds from the issuance of common stock	60,521,729	-
NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES	59,111,274	26,292
NET INCREASE (DECREASE) IN CASH	159,639,768	(13,307,222)
CASH AT BEGINNING OF PERIOD	30,133,213	24,838,567
CASH AT END OF PERIOD	$189,772,981	$11,531,345
Supplementary disclosures:		
Interest Paid	$(27,437)	$(44,722)

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

Arrowhead Pharmaceuticals, Inc.

Notes to Consolidated Financial Statements

(unaudited)

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 collectively to Arrowhead Madison Inc. (“Arrowhead Madison”), Arrowhead Australia Pty Ltd (“Arrowhead Australia”) and Ablaris Therapeutics, Inc. (“Ablaris”), (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, or 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-AAT for liver disease associated with alpha-1 antitrypsin deficiency (AATD), ARO-APOC3 for hypertriglyceridemia, ARO-ANG3 for dyslipidemia, ARO-ENaC for cystic fibrosis, and ARO-HIF2 for renal cell carcinoma. ARO-LPA (AMG 890) for cardiovascular disease was out-licensed to Amgen Inc. in 2016. ARO-AMG1 for an undisclosed genetically validated cardiovascular target is under a license and collaboration agreement with Amgen Inc. ARO-HBV for chronic hepatitis B virus was out-licensed to Janssen Pharmaceuticals, Inc. in October 2018.

Arrowhead operates a lab facility in Madison, Wisconsin, where the Company’s research and development activities, including the development of RNAi therapeutics, are based. The Company’s principal executive offices are located in Pasadena, California.

During fiscal 2019, the Company has continued to develop its pipeline and partnered candidates. In November 2018, the Company presented late-breaking clinical data on ARO-AAT and ARO-HBV at the AASLD Liver Meeting 2018. In December 2018 and January 2019, Clinical Trial Applications (CTAs) were filed for ARO-ANG3 and ARO-APOC3, respectively, and dosing has commenced on ARO-ANG3. The Company has also achieved substantial progress on its other preclinical pipeline candidates including ARO-ENaC and ARO-HIF2 with CTA or equivalent filings planned in 2019. The Company delivered the Arrowhead Deliverable, as defined in its collaboration agreement, to Amgen for ARO-AMG1 in August 2018, and Amgen is currently progressing its phase 1 clinical study of ARO-LPA.

The Company also made significant progress on the business development and partnership front. In October 2018, the Company entered into a License Agreement (“Janssen License Agreement”) and a Research Collaboration and Option Agreement (“Janssen Collaboration Agreement”) with Janssen Pharmaceuticals, Inc. (“Janssen”) part of the Janssen Pharmaceutical Companies of Johnson & Johnson. The Company also entered into a Stock Purchase Agreement (“JJDC Stock Purchase Agreement”) with Johnson & Johnson Innovation-JJDC, Inc. (“JJDC”), a New Jersey corporation. Under the Janssen License Agreement, Janssen has received a worldwide, exclusive license to the

Company's ARO-HBV program, the Company's third-generation subcutaneously administered RNAi therapeutic candidate being developed as a potentially curative therapy for patients with chronic hepatitis B virus infection. Beyond the Company's ongoing Phase 1 / 2 study of ARO-HBV, Janssen will be wholly responsible for clinical development and commercialization. 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 will not include candidates in the Company's current pipeline. The Company will perform discovery, optimization and preclinical development, entirely funded by Janssen, 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. Under the JJDC Stock Purchase Agreement, in October 2018 the Company sold 3,260,869 shares of common stock to JJDC at a price of $23.00 per share. Under the terms of the agreements taken together, the Company has received $175 million as an upfront payment, $75 million in the form of an equity investment by JJDC in Arrowhead common stock, 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's collaboration agreements with Amgen for AMG 890 (ARO-LPA) and ARO-AMG1 continue to progress. The Company has received $35 million in upfront payments and $21.5 million in the form of an equity investment by Amgen in the

Company's Common Stock and could receive up to $617 million in option payments and development, regulatory and sales milestone payments. The Company is further eligible to receive single-digit royalties for sales of products under the ARO-AMG1 agreement and up to low double-digit royalties for sales of products under the AMG 890 (ARO-LPA) Agreement. On August 1, 2018, the Company announced that it had earned a $10 million milestone payment from Amgen following the administration of the first dose of AMG 890 (ARO-LPA) in a phase 1 clinical study. This milestone payment was recognized as revenue during the year ended September 30, 2018.

Liquidity

The Consolidated Financial Statements have been prepared in conformity with the accounting principles generally accepted in the United States of America, which contemplate the continuation of the Company as a going concern. Historically, the Company's primary source of financing has been through the sale of its securities. 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 December 31, 2018, the Company had $189.8 million in cash and cash equivalents, $54.0 million in short-term investments, and $59.6 million in long-term investments to fund operations. During the three months ended December 31, 2018, the Company's cash and investments balance increased by $226.8 million, which was primarily the result of the $75 million equity investment and $175 million upfront payment from JJDC and Janssen, respectively, as discussed further in Note 2 below. These cash inflows were partially offset by cash outflows related to operating activities. Additionally, in October 2018, the Company paid off the remaining $2.3 million balance on its note payable for its research facility lease in Madison, Wisconsin.

Summary of Significant Accounting Policies

Principles of Consolidation—The Consolidated Financial Statements include the accounts of Arrowhead and its Subsidiaries. Arrowhead's primary operating subsidiary is Arrowhead Madison, which is located in Madison, Wisconsin, where the Company's research and development facility is located. All significant intercompany accounts and transactions are eliminated in consolidation.

Basis of Presentation and Use of Estimates—The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. In the opinion of management, all adjustments, consisting of normal recurring accruals, considered necessary for a fair presentation have been included. Actual results could materially differ from those estimates. Actual results could materially differ from those estimates. Additionally, certain reclassifications have been made to prior period financial statements to conform to the current period presentation. These condensed consolidated financial statements should be read in conjunction with the Company's consolidated financial statements and the notes thereto contained in our Annual Report on Form 10-K for the year ended September 30, 2018.

Cash and Cash Equivalents—The Company considers all liquid debt instruments purchased with a maturity of three months or less to be cash equivalents. The Company had no restricted cash at December 31, 2018 and September 30, 2018.

Concentration of Credit Risk—The Company maintains several bank accounts primarily at two financial institutions for its operations. These accounts are insured by the Federal Deposit Insurance Corporation (FDIC) for up to $250,000 per institution. Management believes the Company is not exposed to significant credit risk due to the financial position of the depository institutions in which these deposits are held.

Investments—The Company may invest excess cash balances in short-term and long-term marketable debt securities. Investments may consist of certificates of deposit, money market accounts, government-sponsored enterprise securities, corporate bonds and/or commercial paper. The Company accounts for its investment in marketable securities in accordance with FASB ASC 320, Investments – Debt and Equity Securities. This statement requires debt securities to be classified into three categories:

Held-to-maturity—Debt securities that the entity has the positive intent and ability to hold to maturity are reported at amortized cost.

Trading Securities—Debt securities that are bought and held primarily for the purpose of selling in the near term are reported at fair value, with unrealized gains and losses included in earnings.

Available-for-Sale—Debt securities not classified as either securities held-to-maturity or trading securities are reported at fair value with unrealized gains or losses excluded from earnings and reported as a separate component of shareholders' equity.

The Company classifies its investments in marketable debt securities based on the facts and circumstances present at the time of purchase of the securities. During the three months ended December 31, 2018 and 2017, respectively, all the Company's investments were classified as held-to-maturity.

Held-to-maturity investments are measured and recorded at amortized cost on the Company's Consolidated Balance Sheet. Discounts and premiums to par value of the debt securities are amortized to interest income/expense over the term of the security. No gains or losses on investment securities are realized until they are sold or a decline in fair value is determined to be other-than-temporary.

Property and Equipment—Property and equipment are recorded at cost, which may equal fair market value in the case of property and equipment acquired in conjunction with a business acquisition. Depreciation of property and equipment is recorded using the straight-line method over the respective useful lives of the assets ranging from three to seven years. Leasehold improvements are amortized over the lesser of the expected useful life or the remaining lease term. Long-lived assets, including property and equipment are reviewed for impairment whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable.

Intangible Assets Subject to Amortization—Intangible assets subject to amortization include certain patents and license agreements. Intangible assets subject to amortization are reviewed for impairment whenever events or circumstances indicate that the carrying amount of these assets may not be recoverable.

Contingent Consideration - The consideration for the Company's acquisitions may include future payments that are contingent upon the occurrence of a particular event. For example, milestone payments might be based on the achievement of various regulatory approvals or future sales milestones, and royalty payments might be based on drug product sales levels. The Company records a contingent consideration obligation for such contingent payments at fair value on the acquisition date. The Company estimates the fair value of contingent consideration obligations through valuation models designed to estimate the probability of such contingent payments based on various assumptions and incorporating estimated success rates. Estimated payments are discounted using present value techniques to arrive at an estimated fair value at the balance sheet date. Changes in the fair value of the contingent consideration obligations are recognized within the Company's Consolidated Statements of Operations and Comprehensive Loss. Changes in the fair value of the contingent consideration obligations can result from changes to one or multiple inputs, including adjustments to the discount rates, changes in the amount or timing of expected expenditures associated with product development, changes in the amount or timing of cash flows from products upon commercialization, changes in the assumed achievement or timing of any development milestones, changes in the probability of certain clinical events and changes in the assumed probability associated with regulatory approval. These fair value measurements are based on significant inputs not observable in the market. Substantial judgment is employed in determining the appropriateness of these assumptions as of the acquisition date and for each subsequent period. Accordingly, changes in assumptions could have a material impact on the amount of contingent consideration expense the Company records in any given period. The Company determined the fair value of its contingent consideration obligation to be $0 at December 31, 2018 and September 30, 2018.

Revenue Recognition— On October 1, 2018, the Company adopted FASB Topic 606 – Revenue for Contracts from Customers which amended revenue recognition principles and provides a single, comprehensive set of criteria for revenue recognition within and across all industries. The Company's adoption of the new revenue standard did not have a material impact on its Consolidated Financial Statements. The Company has not yet achieved commercial

sales of its drug candidates to date, however, the new standard is applicable to the Company's ongoing licensing and collaboration agreements, including those with Amgen and Janssen, and the analysis of the impact of this guidance on those agreements is discussed further in Note 2 below.

The new revenue standard provides a five-step framework for recognizing revenue as control of promised goods or services is transferred to a customer at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To determine revenue recognition for arrangements that the Company determines are within the scope of the new revenue standard, the Company performs the following five steps: (i) identify the contract; (ii) identify the performance obligations; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the Company satisfies a performance obligation. At contract inception, the Company assesses whether the goods or services promised within each contract are distinct and, therefore, represent a separate performance obligation, or whether they are not distinct and are combined with other goods and services until a distinct bundle is identified. The Company then determines the transaction price, which typically includes upfront payments and any variable consideration that the Company determines is probable

to not cause a significant reversal in the amount of cumulative revenue recognized when the uncertainty associated with the variable consideration is resolved. The Company then allocates the transaction price to each performance obligation and recognizes the associated revenue when (or as) each performance obligation is satisfied.

The Company recognizes the transaction price allocated to upfront license payments as revenue upon delivery of the license to the customer and resulting ability of the customer to use and benefit from the license, if the license is determined to be distinct from the other performance obligations identified in the contract. These other performance obligations are typically to perform research and development services for the customer, often times relating to the candidate that the customer is licensing. If the license is not considered to be distinct from other performance obligations, the Company assesses the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied at a point in time or over time. If the performance obligation is satisfied over time, the Company then determines the appropriate method of measuring progress for purposes of recognizing revenue from license payments. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the related revenue recognition.

Typically, the Company's collaboration agreements entitle it to additional payments upon the achievement of milestones or royalties on sales. The milestones are generally categorized into three types: development milestones, generally based on the initiation of toxicity studies or clinical trials; regulatory milestones, generally based on the submission, filing or approval of regulatory applications such as a Clinical Trial Application (CTA) or NDA in the United States; and sales-based milestones, generally based on meeting specific thresholds of sales in certain geographic areas. The Company evaluates whether it is probable that the consideration associated with each milestone or royalty will not be subject to a significant reversal in the cumulative amount of revenue recognized. Amounts that meet this threshold are included in the transaction price using the most likely amount method, whereas amounts that do not meet this threshold are excluded from the transaction price until they meet this threshold. At the end of each subsequent reporting period, the Company re-evaluates the probability of a significant reversal of the cumulative revenue recognized for our milestones and royalties, and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and net income in our Consolidated Statement of Operations and Comprehensive Income (Loss). Typically, milestone payments and royalties are achieved after the Company's performance obligations associated with the collaboration agreements have been completed and after the customer has assumed responsibility for the respective clinical or pre-clinical program. Thus, the milestone or royalty payments are recognized as revenue in the period the milestone or royalty was achieved. If a milestone payment is achieved during the performance period, the milestone payment would be recognized as revenue to the extent performance had been completed at that point, and the remaining balance would be recorded as deferred revenue.

The new revenue standard requires the Company to assess whether a significant financing component exists in determining the transaction price. The Company performs this assessment at the onset of its licensing or collaboration agreements. Typically, a significant financing component does not exist because the customer is paying for a license or services in advance with an upfront payment. Additionally, future royalty payments are not substantially within the control of the Company or the customer.

The new revenue standard requires the Company to allocate the arrangement consideration on a relative standalone selling price basis for each performance obligation after determining the transaction price of the contract and identifying the performance obligations to which that amount should be allocated. The relative standalone selling price is defined in the new revenue standard as the price at which an entity would sell a promised good or service separately to a customer. If other observable transactions in which the Company has sold the same performance obligation separately are not available, the Company estimates the standalone selling price of each performance obligation. Key assumptions to determine the standalone selling price may include forecasted revenues, development timelines, reimbursement rates for personnel costs, discount rates and probabilities of technical and regulatory success.

Whenever the Company determines that goods or services promised in a contract should be accounted for as a combined performance obligation over time, the Company determines the period over which the performance obligations will be performed and revenue will be recognized. Revenue is recognized using the proportional performance method. Direct labor hours are typically used as the measure of performance. Significant management judgment is required in determining the level of effort required under an arrangement and the period over which the Company is expected to complete its performance obligations. If the Company determines that the performance obligation is satisfied over time, any upfront payment received is initially recorded as deferred revenue on the Company's Consolidated Balance Sheets.

Certain judgments affect the application of the Company's revenue recognition policy. For example, the Company records short-term and long-term deferred revenue based on its best estimate of when such revenue will be recognized. Short-term deferred revenue consists of amounts that are expected to be recognized as revenue in the next 12 months, and long-term deferred revenue consists of amounts that the Company does not expect will be recognized in the next 12 months. This estimate is based on the Company's current operating plan and, if the Company's operating plan should change in the future, the Company may recognize a different amount of deferred revenue over the next 12-month period.

Allowance for Doubtful Accounts—The Company accrues an allowance for doubtful accounts based on estimates of uncollectible revenues by analyzing historical collections, accounts receivable aging and other factors. Accounts receivable are written off when all collection attempts have failed.

Research and Development—Costs and expenses that can be clearly identified as research and development are charged to expense as incurred in accordance with FASB ASC 730-10. Included in research and development costs are operating costs, facilities, supplies, external services, clinical trial and manufacturing costs, overhead directly related to the Company's research and development operations, and costs to acquire technology licenses.

Net Income (Loss) per Share—Basic net income (loss) per share is computed using the weighted-average number of common shares outstanding during the period. Diluted net income (loss) per share are computed using the weighted-average number of common shares and dilutive potential common shares outstanding during the period. Dilutive potential common shares primarily consist of stock options and restricted stock units issued to employees. During the three months ended December 31, 2018 and 2017, the calculation of the effect of dilutive stock options and restricted stock units was 4,498,360 shares and 0 shares, respectively. During the three months ended December 31, 2018 the calculation of the effect of dilutive stock options and restricted stock units excluded 680,000 stock options due to their anti-dilutive effect. During the three months ended December 31, 2017, the calculation of the effect of dilutive stock options and restricted stock units excluded all stock options and restricted stock units granted and outstanding during the period due to their anti-dilutive effect.

Stock-Based Compensation—The Company accounts for share-based compensation arrangements in accordance with FASB ASC 718, which requires the measurement and recognition of compensation expense for all share-based payment awards to be based on estimated fair values. The Company uses the Black-Scholes option valuation model to estimate the fair value of its stock options at the date of grant. The Black-Scholes option valuation model requires the input of subjective assumptions to calculate the value of stock options. For restricted stock units, the value of the award is based on the Company's stock price at the grant date. For performance-based restricted stock unit awards, the value of the award is based on the Company's stock price at the grant date, with consideration given to the probability of the performance condition being achieved. The Company uses historical data and other information to estimate the expected price volatility for stock option awards and the expected forfeiture rate for all awards. Expense is recognized over the vesting period for all awards and commences at the grant date for time-based awards and upon the Company's determination that the achievement of such performance conditions is probable for performance-based awards. This determination requires significant judgment by management.

Income Taxes—The Company accounts for income taxes under the liability method, which requires the recognition of deferred income tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. Under this method, deferred income taxes are recognized for the tax consequences in future years of differences between the tax bases of assets and liabilities and their financial reporting amounts at each period end based on enacted tax laws and statutory tax rates applicable to the periods in which the differences are expected to affect taxable income. Valuation allowances are established, when necessary, to reduce deferred income tax assets to the amount expected to be realized. The provision for income taxes, if any, represents the tax payable for the period and the change in deferred income tax assets and liabilities during the period.

Recent Accounting Pronouncements

In May 2014, the FASB issued ASU No. 2014-09 Revenue from Contracts with Customers (Topic 606), which will supersede nearly all existing revenue recognition guidance under GAAP. ASU No. 2014-09 provides that an entity recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. This update also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments, and assets recognized from costs incurred to obtain or fulfill a contract. ASU No. 2014-09 allows for either full retrospective or modified retrospective

adoption and will become effective for the Company in the first quarter of fiscal 2019. In April 2016, the FASB issued an amendment to ASU No. 2014-09 with update ASU 2016-10 which provided more specific guidance around the identification of performance obligations and licensing arrangements. On October 1, 2018, the Company adopted this standard using the modified retrospective method. The Company's implementation approach included reviewing the status of each of its ongoing collaboration agreements and designing appropriate internal controls to enable the preparation of financial information. The Company has completed its assessment of the impact of the new revenue recognition guidance and determined that there will be no material impact. The Company's existing performance obligations under its ongoing licensing and collaboration agreements as of October 1, 2018 were substantially completed prior to September 30, 2018. Any future option, milestone or royalty payments received will be accounted for under the sales-based royalty exception provided for under this new revenue recognition guidance. Additionally, there will be no impact to cash from or used in operating, financing or investing activities on the Company's Consolidated Statement of Cash Flows as a result of the adoption of the new standard.

In March 2016, the FASB issued ASU No. 2016-02, Leases. Under ASU 2016-02, lessees will be required to recognize a right-of-use asset and a lease liability for virtually all of their leases (other than leases that meet the definition of a short-term lease). For income statement purposes, a dual model was retained, requiring leases to be classified as either operating or finance. Operating leases will result in straight-line expense (similar to current operating leases) while finance leases will result in a front-loaded expense pattern (similar to current capital leases). ASU 2016-02 becomes effective for the Company in the first quarter of fiscal 2020. The Company expects the adoption of this update to have a material effect on the classification and disclosure of its leased facilities.

In May 2017, the FASB issued ASU No. 2017-09, which is an update to Topic 718, Compensation - Stock Compensation. The update provides guidance on determining which changes to the terms and conditions of share-based payment awards, including stock options, require an entity to apply modification accounting under Topic 718. ASU 2017-09 becomes effective for the Company in the first quarter of fiscal 2019. The adoption of this update has not had a material impact on the Company's results of operations and Consolidated Financial Statements.

In November 2018, the FASB issued 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 becomes effective for the Company in the first quarter of fiscal 2021 with early adoption permitted. The Company does not expect the adoption of this update to have a material effect 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 Inc., a Delaware corporation (“Amgen”). Under one of the license agreements (the “Second Collaboration and License Agreement” or “AMG 890 (ARO-LPA) Agreement”), Amgen has received a worldwide, exclusive license to Arrowhead’s novel, RNAi 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 license agreement (the “First Collaboration and License Agreement” or “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 Common Stock Purchase Agreement, the Company has sold 3,002,793 shares of Common Stock to Amgen at a price of $7.16 per share. Subject to Amgen’s exercise of the Option, as defined in the ARO-AMG1 Agreement, Amgen has agreed to purchase, and the Company has agreed to sell, an additional $5 million worth of shares of Common Stock based on a 30 trading day formula surrounding the date of the Option exercise. Under the terms of the agreements taken together, the Company has received $35 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company’s Common Stock and could receive up to $617 million in Option payments, and development, regulatory and sales milestone payments. The Company is further eligible to receive single-digit royalties for sales of products under the ARO-AMG1 Agreement and up to low double-digit royalties for sales of products under the AMG 890 (ARO-LPA) Agreement.

The Company has evaluated these agreements in accordance with the new revenue recognition standard that became effective for the Company on October 1, 2018. The adoption of the new revenue standard did not have a material impact on the balances reported when evaluated under the superseded revenue standard. During the year ended September 30, 2018, the Company substantially completed its performance obligations under the AMG 890 (ARO-LPA) Agreement and the ARO-AMG1 Agreement. Future milestones and royalties achieved will be recognized in their entirety when earned. During the three months ended December 31, 2018 and 2017, the Company recognized $0 million and $3.5 million of Revenue associated with its agreements with Amgen. As of December 31, 2018 there were $0 million of contract assets, and $0.1 million 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 a License Agreement ("Janssen License Agreement") and a Research Collaboration and Option Agreement ("Janssen Collaboration Agreement") with Janssen Pharmaceuticals, Inc. ("Janssen") part of the Janssen Pharmaceutical Companies of Johnson & Johnson. The Company also entered into a Stock Purchase Agreement ("JJDC Stock Purchase Agreement") with Johnson & Johnson Innovation-JJDC, Inc. ("JJDC"), a New Jersey corporation. Under the Janssen License Agreement, Janssen has received a worldwide, exclusive license to the Company's ARO-HBV program, the Company's third-generation subcutaneously administered RNAi therapeutic candidate being developed as a potentially curative therapy for patients with chronic hepatitis B virus infection. Beyond the Company's ongoing Phase 1 / 2 study of ARO-HBV, Janssen will be wholly responsible for clinical development and commercialization. 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 will not include candidates in the Company's current pipeline. The Company will perform discovery, optimization and preclinical

development, entirely funded by Janssen, 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 JJDC Stock Purchase Agreement, in October 2018 the Company sold 3,260,869 shares of common stock to JJDC at a price of $23.00 per share. Under the terms of the agreements taken together, the Company has received $175 million as an upfront payment, $75 million in the form of an equity investment by JJDC in Arrowhead common stock, 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 the new revenue recognition standard that became effective for the Company on October 1, 2018. The adoption of the new revenue standard did not have a material impact on the balances reported when evaluated under the superseded revenue standard. At the inception of these agreements, the Company has 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 ongoing Phase 1 / 2 study of ARO-HBV and the Company's responsibility to ensure certain manufacturing of 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 will be accounted for if and when it is exercised.

The Company determined the transaction price totaled approximately $197.8 million which includes the upfront payment, the premium paid by JJDC for its equity investment in the Company, and estimated payments for ARO-HBV drug materials on hand and additional material to be manufactured. The Company has allocated the total $197.8 million initial transaction price to its one distinct performance obligation for the ARO-HBV license and the associated Janssen R&D Services. This revenue will be recognized using a proportional performance method (based on actual direct labor hours versus estimated total direct labor hours) beginning in October 2018 and ending as the Company's efforts in overseeing the ongoing phase 1 / 2 clinical trial are completed. During the three months ended December 31, 2018, the Company recognized approximately $34.7 million of Revenue associated with its agreements with Janssen and JJDC. As of December 31, 2018 there were $3.2 million of contract assets recorded as accounts receivable, and $158.1 million of contract liabilities recorded as current deferred revenue and long-term deferred revenue on the Company's Consolidated Balance Sheets. The $3.2 million of accounts receivable is driven by costs incurred that will be reimbursed by Janssen for the ARO-HBV drug materials, and the $158.1 million of current and long-term deferred revenue is driven by the upfront payment and premium paid by JJDC for its equity investment in the Company, net of the $34.7 million of revenue recognized in the period.

NOTE 3. PROPERTY AND EQUIPMENT

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

	December 31,	September 30, 2018

	2018	
Computers, office equipment and furniture	$600,334	$600,334
Research equipment	11,356,568	10,751,627
Software	225,092	152,676
Leasehold improvements	12,269,261	12,236,150
Total gross fixed assets	24,451,255	23,740,787
Less: Accumulated depreciation and amortization	(10,530,588)	(9,805,362)
Property and equipment, net	$13,920,667	$13,935,425

Depreciation and amortization expense for Property and Equipment the for the three months ended December 31, 2018 and 2017 and was $752,245 and $716,066, respectively.

NOTE 4. INVESTMENTS

The Company invests a portion of its excess cash balances in short-term debt securities and may, from time to time, also invest in long-term debt securities. Investments at December 31, 2018 consisted of corporate bonds with maturities remaining of less than 36 months. 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 investments in accordance with FASB ASC 320, Investments – Debt and Equity Securities. At December 31, 2018, all investments were classified as held-to-maturity securities.

The following tables summarize the Company's short-term and long-term investments as of December 31, 2018, and September 30, 2018.

	As of December 31, 2018			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Commercial notes (due within one year)	$53,980,307	$ 201,216	$(799,900)	$53,381,623
Commercial notes (due within two years)	$59,595,287	$ 27,609	$(201,793)	$59,421,103
Total	$113,575,594	$ 228,825	$(1,001,693)	$112,802,726

	As of September 30, 2018			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Commercial notes (due within one year)	$46,400,176	$ —	$(429,050)	$45,971,126
Commercial notes (due within two years)	$—	$ —	$—	$—
Total	$46,400,176	$ —	$(429,050)	$45,971,126

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 approximately $568,887. 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 approximately $5,949,425. Amortization expense for the three months ended December 31, 2018 and 2017 was $425,107 and $425,107, respectively. Amortization expense is expected to be $1,275,322 for the remainder of fiscal 2019, $1,700,429 in 2020, $1,700,429 in 2021, $1,700,429 in 2022, $1,700,429 in 2023, and $10,261,865 thereafter.

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

	Intangible assets subject to amortization
Balance at September 30, 2018	$18,764,010
Impairment	—
Amortization	(425,107)
Balance at December 31, 2018	$18,338,903

NOTE 6. STOCKHOLDERS' EQUITY

At December 31, 2018, 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 December 31, 2018, 92,591,457 shares of Common Stock were outstanding. At December 31, 2018, 7,954,283 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 and 2013 Incentive Plan, as well as for inducement grants made to new employees.

In October 2018 the Company sold 3,260,869 shares of Common Stock to JJDC at a price of $23.00 per share as part of the JJDC Stock Purchase Agreement discussed further in Note 2 above. The Company received proceeds of $75.0 million. The portion of these proceeds that were deemed to be a premium were recorded as deferred revenue as discussed further in Note 2 above.

NOTE 7. COMMITMENTS AND CONTINGENCIES

Leases

The Company leases approximately 8,500 square feet of office space for its corporate headquarters in Pasadena, California. The lease will expire in September 2019. Monthly rental payments are approximately $28,100 per month, increasing approximately 3% annually.

The Company also leases approximately 60,000 square feet of office and laboratory space for its research facility in Madison, Wisconsin. The lease will expire in September 2026. As part of this lease, the Company was provided a primary tenant improvement allowance of $2.1 million which is accounted for as Deferred Rent and a secondary tenant improvement allowance of $2.7 million which was accounted for as a note payable on the Company's Consolidated Balance Sheet. In October 2018, the Company paid off the remaining $2.3 million balance on the note payable. Monthly rental payments are approximately $133,400 per month, increasing approximately 2.5% annually.

Facility rent expense for the three months ended December 31, 2018 and 2017 was $335,000 and $326,000, respectively.

As of December 31, 2018, future minimum lease payments due in fiscal years under operating leases are as follows:

2019	$1,043,245
2020	1,044,431
2021	1,070,496
2022	1,097,168
2023	1,124,445
2024 and thereafter	3,544,882
Total	$8,924,667

In January 2019, the Company entered into amendments to its existing lease for its Madison, Wisconsin research facility. The amendments add an additional 13,000 square feet of office and laboratory space to the facility. The increased capacity of this new facility will accommodate increased research and development personnel and manufacturing capabilities for the Company's expanding pipeline of current and future drug candidates. See Note 11 for additional discussion of these amendments.

Litigation –

The Company and certain of its officers and directors were named as defendants in a putative consolidated class action in the United States District Court for the Central District of California regarding certain public statements in connection with the Company's hepatitis B drug research. The consolidated class action, initially filed as Wang v. Arrowhead Research Corp., et al., No. 2:14-cv-07890 (C.D. Cal., filed Oct. 10, 2014), and Eskinazi v. Arrowhead Research Corp., et al., No. 2:14-cv-07911 (C.D. Cal., filed Oct. 13, 2014), asserted claims under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 and sought damages in an unspecified amount. Additionally, three putative stockholder derivative actions captioned Weisman v. Anzalone et al., No. 2:14-cv-08982 (C.D. Cal., filed

Nov. 20, 2014), Bernstein (Backus) v. Anzalone, et al., No. 2:14-cv-09247 (C.D. Cal., filed Dec. 2, 2014); and Johnson v. Anzalone, et al., No. 2:15-cv-00446 (C.D. Cal., filed Jan. 22, 2015), were filed in the United States District Court for the Central District of California, alleging breach of fiduciary duty by the Company's Board of Directors in connection with the alleged facts underlying the securities claims. An additional consolidated derivative action asserting similar claims was filed in Los Angeles County Superior Court, initially filed as Bacchus v. Anzalone, et al., (L.A. Super., filed Mar. 5, 2015); and Jackson v. Anzalone, et al. (L.A. Super., filed Mar. 16, 2015). Each of these suits seeks damages in unspecified amounts and some seek various forms of injunctive relief. On October 7, 2016, the federal district court dismissed the consolidated class action with prejudice. Following the dismissal of the consolidated class action, the parties for the Weisman and Johnson actions jointly stipulated to dismiss the actions, with the parties bearing their own fees and costs. The parties to the Bernstein and consolidated derivative action agreed to stay the matters pending the resolution of the Ninth Circuit appeal of the dismissal of the consolidated class action. On February 15, 2018, the Ninth Circuit issued a memorandum affirming the district court's dismissal of all claims. Plaintiffs in the consolidated derivative action voluntarily dismissed their case. The parties to the Bernstein action filed a stipulation to continue the stay of the action pending resolution of the Ninth Circuit appeal in Meller v. Arrowhead Pharmaceuticals, Inc., Case No. 2:16-cv-08505 (C.D. Cal.). The Company believes it has meritorious defenses and intends to vigorously defend itself in each of these matters. The Company makes provisions for liabilities when it is both probable that a liability has been incurred and the amount can be reasonably estimated. No

such liability has been recorded related to these matters. The Company does not expect these matters to have a material effect on its Consolidated Financial Statements.

The Company and certain executive officers were named as defendants in a putative consolidated class action in the United States District Court for the Central District of California regarding certain public statements in connection with the Company's drug research programs. The consolidated class action, initially filed as Meller v. Arrowhead Pharmaceuticals, Inc., et al., No. 2:16-cv-08505 (C.D. Cal, filed Nov. 15, 2016), Siegel v. Arrowhead Pharmaceuticals, Inc., et al., No. 2:16-cv-8954 (C.D. Cal., filed Dec. 2, 2016), and Unz v. Arrowhead Pharmaceuticals, Inc., et al., No.2:17-cv-00310 (C.D. Cal., filed Jan. 13, 2017) asserts claims under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 regarding certain public statements in connection with the Company's drug research programs and seek damages in an unspecified amount. Additionally, a putative stockholder derivative action captioned Johnson v. Anzalone, et al., (Los Angeles County Superior Court, filed January 19, 2017) asserting substantially similar claims is pending in Los Angeles County Superior Court and is stayed pending the related consolidated class action. Two additional putative stockholder derivative actions, captioned Lucas v. Anzalone, et al., No. 2:17-cv-03207 (C.D. Cal., filed April 28, 2017), and Singh v. Anzalone, et al., No. 2:17-cv-03160 (C.D. Cal., filed April 27, 2017), alleging breach of fiduciary duty by the Company's Board of Directors in connection with the alleged facts underlying the securities claims, are pending in the United States District Court for the Central District of California. The Lucas and Singh actions have been consolidated. On December 21, 2017, the federal district court dismissed the consolidated class action with prejudice. On December 27, 2017 the plaintiffs appealed the dismissal to the United States Court of Appeals for the Ninth Circuit. The Lucas and Singh actions are stayed pending resolution of the Ninth Circuit appeal. The Company believes it has meritorious defenses and intends to vigorously defend itself in these matters. The Company makes provisions for liabilities when it is both probable that a liability has been incurred and the amount can be reasonably estimated. No such liability has been recorded related to these matters. The Company cannot predict the ultimate outcome of this matter and cannot accurately estimate any potential liability the Company may incur or the impact of the results of this matter on the Company.

With regard to legal fees, such as attorney fees related to these matters or any other legal matters, the Company recognizes such costs as incurred.

Purchase Commitments

In the normal course of business, we enter into various purchase commitments for the manufacture of drug components, for toxicology studies, and for clinical studies. As of December 31, 2018, these future commitments were estimated at approximately $34.0 million, of which approximately $25.0 million is expected to be incurred in fiscal 2019, and $9.0 is expected to be incurred beyond fiscal 2019.

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 NDA and upon certain sales level milestones. These milestone payments could amount to the mid to upper double-digit millions of dollars. During the three months ended December 31, 2018 and 2017, the Company did not reach milestones requiring payment. 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. STOCK-BASED COMPENSATION

Arrowhead has two plans that provide for equity-based compensation. Under the 2004 Equity Incentive Plan and 2013 Incentive Plan, as of December 31, 2018, 1,750,568 and 5,475,495 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 December 31, 2018, there were options granted and outstanding to purchase 1,750,568 and 2,926,286 shares of Common Stock under the 2004 Equity Incentive Plan and the 2013 Incentive Plan, respectively, and there were 2,313,000 restricted stock units granted and outstanding under the 2013 Incentive Plan. Also, as of December 31, 2018, there were 728,218 shares reserved for options issued as inducement grants to new employees outside of equity compensation plans. During the three months ended December 31, 2018, 0 options and 3,459 restricted stock units were granted under the 2013 Incentive Plan, and 47,000 options and 0 restricted stock units were granted as inducement awards to new employees outside of equity incentive plans.

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, 2018	5,524,399	$ 6.14		
Granted	47,000	13.73		
Cancelled	—	—		
Exercised	(166,327)	6.04		
Balance At December 31, 2018	5,405,072	$ 6.21	5.8 years	$35,651,163
Exercisable At December 31, 2018	3,686,534	$ 6.50	4.9 years	$24,853,606

Stock-based compensation expense related to stock options for the three months ended December 31, 2018 and 2017 was $790,345 and $900,659, 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 December 31, 2018 and 2017 was $556,889 and $348,899, respectively.

The intrinsic value of the options exercised during the three months ended December 31, 2018 and 2017 was $1,315,700 and $0, respectively.

As of December 31, 2018, the pre-tax compensation expense for all outstanding unvested stock options in the amount of approximately $4,883,533 will be recognized in the Company’s results of operations over a weighted average period of 2.8 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:

	Three Months Ended December 31,	
	2018	2017

Dividend yield	—	—
Risk-free interest rate	2.75 – 3.11%	2.05 – 2.22%
Volatility	115%	110%
Expected life (in years)	6.25	6.25
Weighted average grant date fair value per share of options granted	$11.85	$3.03

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 inducement grants granted outside of the Plan. During the three months ended December 31, 2018, the Company issued 3,459 RSUs under the 2013 Incentive Plan. At vesting, each outstanding RSU will be exchanged for one share of the Company's Common Stock. RSU recipients may elect to net share settle upon vesting, in which case the Company pays the employee's income taxes due upon vesting and withholds a number of shares of Common Stock of equal value. 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, 2018	2,968,500	$ 2.99
Granted	3,459	13.73
Vested	(658,959)	4.29
Forfeited	—	—
Unvested at December 31, 2018	2,313,000	$ 2.64

During the three months ended December 31, 2018 and 2017, the Company recorded $1,927,099 and $1,191,882 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 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.

As of December 31, 2018, the pre-tax compensation expense for all unvested RSUs in the amount of approximately $1,679,283 will be recognized in the Company's results of operations over a weighted average period of 2.9 years.

NOTE 9. 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 December 31, 2018 and September 30, 2018 for assets and liabilities measured at fair value on a recurring basis:

December 31, 2018:

	Level 1	Level 2	Level 3	Total
Cash and cash equivalents	$189,772,981	$ —	$ —	$189,772,981
Short-term investments	$53,381,623	$ —	$ —	$53,381,623
Long-term investments	$59,421,103	$ —	$ —	$59,421,103
Contingent Consideration	$—	$ —	$ —	$—

September 30, 2018:

	Level 1	Level 2	Level 3	Total
Cash and cash equivalents	$30,133,213	$ —	$ —	$30,133,213
Short-term investments	$45,971,126	$ —	$ —	$45,971,126
Long-term investments	$—	$ —	$ —	$—
Contingent Consideration	$—	$ —	$ —	$—

As of September 30, 2015, the Company had a liability for contingent consideration related to its acquisition of the Roche RNAi business completed in 2011. The fair value measurement of the contingent consideration obligations is determined using Level 3 inputs. The fair value of contingent consideration obligations is based on a discounted cash flow model using a probability-weighted income approach. The measurement is based upon unobservable inputs supported by little or no market activity based on the Company's assumptions and experience. Estimating timing to complete the development and obtain approval of products is difficult, and there are inherent uncertainties in developing a product candidate, such as obtaining U.S. Food and Drug Administration (FDA) and other regulatory approvals. In determining the probability of regulatory approval and commercial success, the Company utilizes data regarding similar milestone events from several sources, including industry studies and its own experience. These fair value measurements represent Level 3 measurements as they are based on significant inputs not observable in the market. Significant judgment is employed in determining the appropriateness of these assumptions as of the acquisition date and for each subsequent period. Accordingly, changes in assumptions could have a material impact on the amount of contingent consideration expense the Company records in any given period. In November 2016, the Company announced the discontinuation of its clinical trial efforts for ARC-520, ARC-AAT and ARC-521. Given this development, the Company assessed the fair value of its contingent consideration obligation to be $0 at December 31, 2018 and September 30, 2018.

NOTE 10. - INCOME TAXES

There was no provision for income taxes for the three months ended December 31, 2018 and 2017. During the three months ended December 31, 2018, the Company generated net income of $12.0 million. However, this net income was more than offset by the Company's existing net operating loss carryforwards. As of December 31, 2018, the Company's remaining deferred income taxes assets, consisting primarily of net operating loss carryforwards, remain fully offset by a valuation allowance.

NOTE 11. SUBSEQUENT EVENTS

In January 2019, the Company amended its existing lease for its Madison, Wisconsin research facility, which added an additional 13,000 square feet of laboratory space to the facility, and extended the term of the lease through September 2029. This additional space will accommodate increased research and development personnel and manufacturing capabilities for the Company's expanding pipeline of current and future drug candidates. The initial term of the amended lease commenced on January 1, 2019 with expected occupancy of the additional space in mid to late 2019, after certain leasehold improvements have been completed.

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," "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. As such, our actual results may differ significantly 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 described in other documents we file from time to time with the Securities and Exchange Commission ("SEC"), including 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.

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, or 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-AAT for liver disease associated with alpha-1 antitrypsin deficiency (AATD), ARO-APOC3 for hypertriglyceridemia, ARO-ANG3 for dyslipidemia, ARO-ENaC for cystic fibrosis, and ARO-HIF2 for renal cell carcinoma. ARO-LPA (AMG 890) for cardiovascular disease was out-licensed to Amgen Inc. in 2016. ARO-AMG1 for an undisclosed genetically validated cardiovascular target is under a license and collaboration agreement with Amgen Inc. ARO-HBV for chronic hepatitis B virus was out-licensed to Janssen Pharmaceuticals, Inc. in October 2018.

Arrowhead operates a lab facility in Madison, Wisconsin, where the Company's research and development activities, including the development of RNAi therapeutics, are based. 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 fiscal 2019, the Company has continued to develop its pipeline and partnered candidates. In November 2018, the Company presented late-breaking clinical data on ARO-AAT and ARO-HBV at the AASLD Liver Meeting 2018. In December 2018 and January 2019, Clinical Trial Applications (CTAs) were filed for ARO-ANG3 and ARO-APOC3, respectively, and dosing has commenced on ARO-ANG3. The Company has also achieved substantial progress on its other preclinical pipeline candidates including ARO-ENaC and ARO-HIF2 with CTA or equivalent filings planned in 2019. The Company delivered the Arrowhead Deliverable, as defined in its collaboration agreement, to Amgen for ARO-AMG1 in August 2018, and Amgen is currently progressing its phase 1 clinical study of ARO-LPA.

The Company also made significant progress on the business development and partnership front. In October 2018, the Company entered into a License Agreement ("Janssen License Agreement") and a Research Collaboration and Option Agreement ("Janssen Collaboration Agreement") with Janssen Pharmaceuticals, Inc. ("Janssen") part of the Janssen Pharmaceutical Companies of Johnson & Johnson. The Company also entered into a Stock Purchase Agreement ("JJDC Stock Purchase Agreement") with

Johnson & Johnson Innovation-JJDC, Inc. ("JJDC"), a New Jersey corporation. Under the Janssen License Agreement, Janssen has received a worldwide, exclusive license to the Company's ARO-HBV program, the Company's third-generation subcutaneously administered RNAi therapeutic candidate being developed as a potentially curative therapy for patients with chronic hepatitis B virus infection. Beyond the Company's ongoing Phase 1 / 2 study of ARO-HBV, Janssen will be wholly responsible for clinical development and commercialization. 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 will not include candidates in the Company's current pipeline. The Company will perform discovery, optimization and preclinical development, entirely funded by Janssen, 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. Under the JJDC Stock Purchase Agreement, in October 2018 the Company sold 3,260,869 shares of common stock to JJDC at a price of $23.00 per share. Under the terms of the agreements taken together, the Company has received $175 million as an upfront payment, $75 million in the form of an equity investment by JJDC in Arrowhead common stock 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's collaboration agreements with Amgen for AMG 890 (ARO-LPA) and ARO-AMG1 with Amgen continue to progress. The Company has received $35 million in upfront payments and $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock and could receive up to $617 million in option payments and development, regulatory and sales milestone payments. The Company is further eligible to receive single-digit royalties for sales of products under the ARO-AMG1 agreement and up to low double-digit royalties for sales of products under the AMG 890 (ARO-LPA) Agreement. On August 1, 2018, the Company announced that it had earned a $10 million milestone payment from Amgen following the administration of the first dose of AMG 890 (ARO-LPA) in a phase 1 clinical study. This milestone payment was recognized as revenue during the year ended September 30, 2018.

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 contracted to third-party manufacturers when cGMP production is required. The Company engages third-party contract research organizations (CROs) to manage clinical trials and works collaboratively 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 "program costs". If the clinical candidates progress through human testing, program costs will increase.

Net income was $12.0 million for the three months ended December 31, 2018 as compared to a net loss of $13.2 million for the three months ended December 31, 2017. Net income per share – diluted was $0.13 for the three months ended December 31, 2018 as compared to net loss per share - diluted of $0.18 for the three months ended December 31, 2017. An increase in revenue from the license and collaboration agreements with Janssen was the driver of the increase in net income and net income per share, as discussed further below.

Additionally, the Company strengthened its liquidity and financial position through the Janssen License Agreement, Janssen Collaboration Agreement and JJDC Stock Purchase Agreement, executed in October 2018. Under the terms of the agreements taken together, the Company has received $175 million as an upfront payment, $75 million in the form of an equity investment by JJDC in Arrowhead common stock. These cash proceeds secure the funding needed to continue to advance our pipeline candidates. The Company had $189.8 million of cash and cash equivalents, $54.0 million in short-term investments, $59.6 million of long term investments and $340.9 million of total assets as of December 31, 2018, as compared to $30.1 million, $46.4 million, $0 million and $111.6 million as of September 30, 2018, 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

Management makes certain judgments and uses certain estimates and assumptions when applying GAAP in the preparation of our Consolidated Financial Statements. We evaluate our estimates and judgments on an ongoing basis and base our estimates on historical experience and on assumptions that we believe to be reasonable under the circumstances. Our experience and assumptions form the basis for our judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may vary from what we anticipate and different assumptions or estimates about the future could change our reported results. We believe the following accounting policies are the most critical to us, in that they require our most difficult, subjective or complex judgments in the preparation of our consolidated financial statements. For further information, see Note 1, Organization and Significant Accounting Policies, to our Consolidated Financial Statements, which outlines our application of significant accounting policies.

Revenue Recognition

Revenue Recognition— On October 1, 2018, the Company adopted FASB Topic 606 – Revenue for Contracts from Customers which amended revenue recognition principles and provides a single, comprehensive set of criteria for revenue recognition within and across all industries. The Company's adoption of the new revenue standard did not have a material impact on its Consolidated Financial Statements. The Company has not yet achieved commercial sales of its drug candidates to date, however, the new standard is applicable to the Company's ongoing licensing and collaboration agreements, including those with Amgen and Janssen, and the analysis of the impact of this guidance on those agreements is discussed further below.

The new revenue standard provides a five-step framework for recognizing revenue as control of promised goods or services is transferred to a customer at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To determine revenue recognition for arrangements that the Company determines are within the scope of the new revenue standard, the Company performs the following five steps: (i) identify the contract; (ii) identify the performance obligations; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the Company satisfies a performance obligation. At contract inception, the Company assesses whether the goods or services promised within each contract are distinct and, therefore, represent a separate performance obligation, or whether they are not distinct and are combined with other goods and services until a distinct bundle is identified. The Company then determines the transaction price, which typically includes upfront payments and any variable consideration that the Company determines is probable to not cause a significant reversal in the amount of cumulative revenue recognized when the uncertainty associated with the variable consideration is resolved. The Company then allocates the transaction price to each performance obligation and recognizes the associated revenue when (or as) each performance obligation is satisfied.

The Company recognizes the transaction price allocated to upfront license payments as revenue upon delivery of the license to the customer and resulting ability of the customer to use and benefit from the license, if the license is determined to be distinct from the other performance obligations identified in the contract. These other performance obligations are typically to perform research and development services for the customer, often times relating to the candidate that the customer is licensing. If the license is not considered to be distinct from other performance obligations, the Company assesses the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied at a point in time or over time. If the performance obligation is satisfied over time, the Company then determines the appropriate method of measuring progress for purposes of recognizing revenue from license payments. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the related revenue recognition.

Typically, the Company's collaboration agreements entitle it to additional payments upon the achievement of milestones or royalties on sales. The milestones are generally categorized into three types: development milestones, generally based on the initiation of toxicity studies or clinical trials; regulatory milestones, generally based on the submission, filing or approval of regulatory applications such as a Clinical Trial Application (CTA) or NDA in the United States; and sales-based milestones, generally based on meeting specific thresholds of sales in certain geographic areas. The Company evaluates whether it is probable that the consideration associated with each milestone or royalty will not be subject to a significant reversal in the cumulative amount of revenue recognized. Amounts that meet this threshold are included in the transaction price using the most likely amount method, whereas amounts that do not meet this threshold are excluded from the transaction price until they meet this threshold. At the end of each subsequent reporting period, the Company re-evaluates the probability of a significant reversal of the cumulative revenue recognized for our milestones and royalties, and, if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and net income in our Consolidated Statement of Operations and Comprehensive Income (Loss). Typically, milestone payments and royalties are achieved after the Company's performance obligations associated with the collaboration agreements have been completed and after the customer has assumed responsibility for the respective clinical or

pre-clinical program. Thus, the milestone or royalty payments are recognized as revenue in the period the milestone or royalty was achieved. If a milestone payment is achieved during the performance period, the milestone payment would be recognized as revenue to the extent performance had been completed at that point, and the remaining balance would be recorded as deferred revenue.

The new revenue standard requires the Company to assess whether a significant financing component exists in determining the transaction price. The Company performs this assessment at the onset of its licensing or collaboration agreements. Typically, a significant financing component does not exist because the customer is paying for a license or services in advance with an upfront payment. Additionally, future royalty payments are not substantially within the control of the Company or the customer.

The new revenue standard requires the Company to allocate the arrangement consideration on a relative standalone selling price basis for each performance obligation after determining the transaction price of the contract and identifying the performance obligations to which that amount should be allocated. The relative standalone selling price is defined in the new revenue standard as the price at which an entity would sell a promised good or service separately to a customer. If other observable transactions in which the Company has sold the same performance obligation separately are not available, the Company estimates the standalone selling

price of each performance obligation. Key assumptions to determine the standalone selling price may include forecasted revenues, development timelines, reimbursement rates for personnel costs, discount rates and probabilities of technical and regulatory success.

Whenever the Company determines that goods or services promised in a contract should be accounted for as a combined performance obligation over time, the Company determines the period over which the performance obligations will be performed and revenue will be recognized. Revenue is recognized using the proportional performance method. Direct labor hours are typically used as the measure of performance. Significant management judgment is required in determining the level of effort required under an arrangement and the period over which the Company is expected to complete its performance obligations. If the Company determines that the performance obligation is satisfied over time, any upfront payment received is initially recorded as deferred revenue on the Company's Consolidated Balance Sheets.

Certain judgments affect the application of the Company's revenue recognition policy. For example, the Company records short-term and long-term deferred revenue based on its best estimate of when such revenue will be recognized. Short-term deferred revenue consists of amounts that are expected to be recognized as revenue in the next 12 months, and long-term deferred revenue consists of amounts that the Company does not expect will be recognized in the next 12 months. This estimate is based on the Company's current operating plan and, if the Company's operating plan should change in the future, the Company may recognize a different amount of deferred revenue over the next 12-month period.

Impairment of Long-lived Assets

We review long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of assets may not be fully recoverable or that our assumptions about the useful lives of these assets are no longer appropriate. If impairment is indicated, recoverability is measured by a comparison of the carrying amount of an asset to the estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset.

Impairment of Intangible assets

Intangible assets consist of a license agreement and patents acquired in conjunction with a business or asset acquisition. Intangible assets are monitored for potential impairment whenever events or circumstances indicate that the carrying amount may not be recoverable and are also reviewed annually to determine whether any impairment is necessary. Based on ASU 2012-02, the annual review of intangible assets is performed via a two-step process. First, a qualitative assessment is performed to determine if it is more likely than not that the intangible asset is impaired. If required, a quantitative assessment is performed and, if necessary, impairment is recorded.

Stock-Based Compensation

We account for stock-based compensation arrangements in accordance with FASB ASC 718, which requires the measurement and recognition of compensation expense for all share-based payment awards to be based on estimated fair values. The Company uses the Black-Scholes option valuation model to estimate the fair value of its stock options at the date of grant. The Black-Scholes option valuation model requires the input of subjective assumptions to calculate the value of stock options. For restricted stock units, the value of the award is based on the Company's stock price at the grant date. For performance-based restricted stock unit awards, the value of the award is based on the Company's stock price at the grant date with consideration given to the probability of the performance condition being achieved. The Company uses historical data and other information to estimate the expected price volatility for stock option awards and the expected forfeiture rate for all awards. Expense is recognized over the vesting period for all awards and commences at the grant date for time-based awards and upon the Company's determination that the

achievement of such performance conditions is probable for performance-based awards. This determination requires significant judgement by management.

Contingent Consideration

The consideration for our acquisitions often includes future payments that are contingent upon the occurrence of a particular event. For example, milestone payments might be based on progress of clinical development, the achievement of various regulatory approvals or future sales milestones, and royalty payments might be based on drug product sales levels. The Company records a contingent consideration obligation for such contingent payments at fair value on the acquisition date. The Company estimates the fair value of contingent consideration obligations through valuation models designed to estimate the probability of the occurrence of such contingent payments based on various assumptions and incorporating estimated success rates. Estimated payments are discounted using present value techniques to arrive at estimated fair value at the balance sheet date. Changes in the fair value of our contingent consideration obligations are recognized within our Consolidated Statements of Operations. Changes in the fair value of the contingent consideration obligations can result from changes to one or multiple inputs, including adjustments to the discount rates, changes in the

amount or timing of expected expenditures associated with product development, changes in the amount or timing of cash flows from products upon commercialization, changes in the assumed achievement or timing of any development milestones, changes in the probability of certain clinical events and changes in the assumed probability associated with regulatory approval. These fair value measurements are based on significant inputs not observable in the market. Substantial judgment is employed in determining the appropriateness of these assumptions as of the acquisition date and for each subsequent period. Accordingly, changes in assumptions could have a material impact on the amount of contingent consideration expense the Company records in any given period.

Results of Operations

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

	Three Months Ended December 31, 2018	Three Months Ended December 31, 2017
Revenue	$34,657,896	$3,509,821
Operating Income (Loss)	10,946,144	(13,813,348)
Net Income (Loss)	12,037,253	(13,198,878)
Net Income (Loss) per Share (Diluted)	$0.13	$(0.18)

The increase in our Revenue during the three months ended December 31, 2018 was driven by the revenue recognized from our agreements with Janssen and JJDC which were executed in October 2018. This increase in Revenue was also the key driver of the increase in our Operating Income, Net Income and Net Income per Share.

Revenue

Total revenue was $34,657,896 for the three months ended December 31, 2018 and $3,509,821 for the three months ended December 31, 2017. Revenue in the current period is primarily related to the recognition of a portion of the $197.8 million initial transaction price associated with our agreements with Janssen and JJDC as we achieved progress toward completing our performance obligations within those agreements. Revenue in the previous period was primarily related to the upfront payments received from Amgen in 2016 that we recognized as Revenue as performance was completed for the AMG 890 (ARO-LPA) and ARO-AMG1 Agreements.

Amgen Inc.

On September 28, 2016, the Company entered into two Collaboration and License agreements, and a Common Stock Purchase Agreement with Amgen Inc., a Delaware corporation (“Amgen”). Under one of the license agreements (the “Second Collaboration and License Agreement” or “AMG 890 (ARO-LPA) Agreement”), Amgen has received a worldwide, exclusive license to Arrowhead’s novel, RNAi 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 license agreement (the “First Collaboration and License Agreement” or “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 Common Stock Purchase Agreement, the Company has sold 3,002,793 shares of Common Stock to Amgen at a price of $7.16 per share. Subject to Amgen’s exercise of the Option, as defined in the ARO-AMG1 Agreement, Amgen has agreed to purchase, and the Company

has agreed to sell, an additional $5 million worth of shares of Common Stock based on a 30 trading day formula surrounding the date of the Option exercise. Under the terms of the agreements taken together, the Company has received $35 million in upfront payments, $21.5 million in the form of an equity investment by Amgen in the Company's Common Stock and could receive up to $617 million in option payments, and development, regulatory and sales milestone payments. The Company is further eligible to receive single-digit royalties for sales of products under the ARO-AMG1 Agreement and up to low double-digit royalties for sales of products under the AMG 890 (ARO-LPA) Agreement.

The Company has evaluated these agreements in accordance with the new revenue recognition requirements that became effective for the Company on October 1, 2018. The adoption of the new revenue standard did not have a material impact on the balances reported when evaluated under the superseded revenue standard. During the year ended September 30, 2018, the Company substantially completed its performance obligations under the AMG 890 (ARO-LPA) Agreement and the ARO-AMG1 Agreement. Future milestones and royalties achieved will be recognized in their entirety when earned. During the three months ended December 31, 2018 and 2017, the Company recognized $0 million and $3.5 million of Revenue associated with its agreements with Amgen. As of December 31, 2018 there was $0 million of contract assets, and $0.1 million 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 a License Agreement ("Janssen License Agreement") and a Research Collaboration and Option Agreement ("Janssen Collaboration Agreement") with Janssen Pharmaceuticals, Inc. ("Janssen") part of the Janssen Pharmaceutical Companies of Johnson & Johnson. The Company also entered into a Stock Purchase Agreement ("JJDC Stock Purchase Agreement") with Johnson & Johnson Innovation-JJDC, Inc. ("JJDC"), a New Jersey corporation. Under the Janssen License Agreement, Janssen has received a worldwide, exclusive license to the Company's ARO-HBV program, the Company's third-generation subcutaneously administered RNAi therapeutic candidate being developed as a potentially curative therapy for patients with chronic hepatitis B virus infection. Beyond the Company's ongoing Phase 1 / 2 study of ARO-HBV, Janssen will be wholly responsible for clinical development and commercialization. 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 will not include candidates in the Company's current pipeline. The Company will perform discovery, optimization and preclinical development, entirely funded by Janssen, 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 JJDC Stock Purchase Agreement, in October 2018 the Company sold 3,260,869 shares of common stock to JJDC at a price of $23.00 per share. Under the terms of the agreements taken together, the Company has received $175 million as an upfront payment, $75 million in the form of an equity investment by JJDC in Arrowhead common stock, 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 the new revenue recognition requirements that became effective for the Company on October 1, 2018. The adoption of the new revenue standard did not have a material impact on the balances reported when evaluated under the superseded revenue standard. At the inception of these agreements, the Company has 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 ongoing Phase 1 / 2 study of ARO-HBV and the Company's responsibility to ensure certain manufacturing of 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 will be accounted for if and when it is exercised.

The Company determined the transaction price totaled approximately $197.8 million which includes the upfront payment, the premium paid by JJDC for its equity investment in the Company, and estimated payments for ARO-HBV drug materials on hand and additional material to be manufactured. The Company has allocated the total $197.8 million initial transaction price to its one distinct performance obligation for the ARO-HBV license and the associated Janssen R&D Services. This revenue will be recognized using a proportional performance method (based on actual labor hours versus estimated total labor hours) beginning in October 2018 and ending as the Company's efforts in overseeing the ongoing phase 1 / 2 clinical trial are completed. During the three months ended December 31, 2018, the Company recognized approximately $34.7 million of Revenue associated with its agreements with Janssen and JJDC. As of December 31, 2018 there were $3.2 million of contract assets recorded as accounts receivable, and $158.1 million of contract liabilities recorded as current deferred revenue and long-term deferred revenue on the Company's Consolidated Balance Sheets. The $3.2 million of accounts receivable is driven by costs incurred that will be reimbursed by Janssen for the ARO-HBV drug materials, and the $158.1 million of current and long-term deferred revenue is driven by the upfront payment and premium paid by JJDC for its equity investment in the Company, net of the $34.7 million of revenue recognized in the period.

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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 months ended December 31, 2018 and 2017 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 facility in Madison, Wisconsin, 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 Madison research facility. The following table provides details of research and development expense for the periods indicated:

(in thousands)

	Three Months Ended December 31, 2018	% of Expense Category	Three Months Ended December 31, 2017	% of Expense Category	Increase (Decrease) $	Increase (Decrease) %
Salaries	$ 3,277	19 %	$ 2,811	22 %	$ 466	17 %
Stock compensation	641	3 %	544	4 %	97	18 %
In Vivo studies	483	3 %	680	5 %	(197)	-29 %
Drug manufacturing	5,804	33 %	3,453	27 %	2,351	68 %
Toxicity/efficacy studies	2,411	14 %	1,884	15 %	527	28 %
Clinical trials	2,242	13 %	815	6 %	1,427	175 %
License, royalty & milestones	-	0 %	19	0 %	(19)	N/A
Facilities related	583	3 %	594	5 %	(11)	-2 %
Depreciation/amortization	1,172	7 %	1,133	9 %	39	3 %
Other R&D	959	5 %	987	7 %	(28)	-3 %
Total	$ 17,572	100 %	$ 12,920	100 %	$ 4,652	36 %

Salaries expense increased by $466,000 from $2,811,000 during the three months ended December 31, 2017 to $3,277,000 during the current period. The increase in the expense is primarily due to an increase in R&D headcount that has occurred as the Company has expanded its pipeline of candidates.

Stock compensation expense, a non-cash expense, increased by $97,000 from $544,000 during the three months ended December 31, 2017 to $641,000 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 is primarily due to the increased headcount discussed above and a mix of higher grant date fair values of awards amortizing during the periods due to the Company's stock price at the time of the grants.

In vivo studies expense decreased by $197,000 from $680,000 during the three months ended December 31, 2017 to $483,000 during the current period. In vivo studies expense can vary depending on the stage of preclinical candidates, the nature and amount of testing required and the cost variation of different in vivo testing models. The decrease in in vivo studies expense is a result of the timing of discovery studies being completed in the prior period.

Drug manufacturing expense increased by $2,351,000 from $3,453,000 during the three months ended December 31, 2017 to $5,804,000 during the current period. The increase in the expense primarily relates to the timing of manufacturing campaigns for ARO-HBV, ARO-ANG3 and ARO-APOC3 clinical trials and toxicology studies. We anticipate this expense to increase as the volume of candidates in our pipeline increases and as each candidate progresses through clinical trial phases.

Toxicity/efficacy studies expense increased by $527,000 from $1,884,000 during the three months ended December 31, 2017 to $2,411,000 during the current period. This category includes IND-enabling toxicology studies as well as post-IND toxicology studies, such as long-term toxicology studies, and other efficacy studies. The increase in the expense primarily relates to toxicology studies for ARO-AAT, ARO-HBV, ARO-ANG3 and ARO-APOC3 as each candidate progresses through and into clinical trials. We anticipate this expense to increase as we prepare to enter clinical trials with our other drug candidates.

Clinical trials expense increased by $1,427,000 from $815,000 during the three months ended December 31, 2017 to $2,242,000 during the current period. The increase in the expense is primarily due to the ongoing ARO-AAT and ARO-HBV clinical trials. We anticipate this expense to increase as ARO-AAT progresses through clinical trials and as we enter clinical trials with our other drug candidates.

License, royalty and milestones expense was minor in both periods. This category includes milestone payments which can vary from period to period depending on the nature of our various license agreements, and the timing of reaching various development milestones requiring payment. No significant milestones were achieved in either period.

Facilities expense was consistent at $594,000 during the three months ended December 31, 2017 and $583,000 during the current period. This category includes rental costs for our research and development facility in Madison, Wisconsin.

Depreciation and amortization expense, a non-cash expense, was consistent at $1,133,000 during the three months ended December 31, 2017 and $1,172,000 during the current period. The majority of depreciation and amortization expense relates to depreciation on lab equipment at our Madison research facility. In addition, the Company records depreciation on leasehold improvements at its Madison research facility.

Other research expense was consistent at $987,000 during the three months ended December 31, 2017 to $959,000 during the current period. This category includes the following costs to support discovery efforts and the advancement of current drug candidates: in-house laboratory supplies, outsourced labs services, and other miscellaneous research and development expenses.

General & Administrative Expenses

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

(in thousands)

	Three Months Ended December 31, 2018	% of Expense Category		Three Months Ended December 31, 2017	% of Expense Category		Increase (Decrease) $		Increase (Decrease) %	
Salaries	$ 2,089	34	%	$ 1,176	27	%	$913		78	%
Stock compensation	2,077	34	%	1,548	35	%	529		34	%
Professional/outside services	1,220	20	%	1,146	26	%	74		6	%
Facilities related	298	5	%	178	4	%	120		67	%
Depreciation/amortization	5	0	%	8	0	%	(3	)	-38	%
Other G&A	451	7	%	348	8	%	103		30	%
Total	$ 6,140	100	%	$ 4,404	100	%	$1,736		39	%

Salaries expense increased by $913,000 from $1,176,000 during the three months ended December 31, 2017 to $2,089,000 during the current period. The increase in the expense is primarily driven by annual merit increases, performance bonuses and increased headcount.

Stock compensation expense, a non-cash expense, increased by $529,000 from $1,548,000 during the three months ended December 31, 2017 to $2,077,000 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 is primarily due to the achievement of certain performance-based awards during the current period.

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 $74,000 from $1,146,000 during the three months ended December 31, 2017 to $1,220,000 during the current period. The increase in the expense is primarily related to the timing of certain patent expenses.

Facilities-related expense increased $120,000 from $178,000 during the three months ended December 31, 2017 to $298,000 during the current period. This category primarily includes rental costs for our corporate headquarters in Pasadena, California. However, the increase in the expense is primarily related to miscellaneous office expenses driven by our increased headcount.

Depreciation and amortization expense, a noncash expense, was minor in each of the periods. The majority of general and administrative depreciation and amortization expense relates to depreciation on leasehold improvements at our Pasadena headquarters.

Other G&A expense increased by $103,000 from $348,000 during the three months ended December 31, 2017 to $451,000 during the current period. This category consists primarily of travel, communication and technology, office expenses, and franchise and property tax expenses. The increase in the expense was due to various travel and communication and technology expenses.

Other Income / Expense

Other income / expense was income of $614,470 during the three months ended December 31, 2017 as compared to income of $1,091,109 during the current period. The largest component of other income / expense in the current period was interest income of $1.1 million earned on the Company's short-term investments. The largest component of other income / expense in the previous period was $0.5 million in other income due to the change in the value of derivative liabilities related to certain warrants with a price adjustment feature, which required derivative accounting. These warrants expired during the year ended September 30, 2018.

Liquidity and Cash 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 December 31, 2018, the Company had cash on hand of approximately $189.8 million as compared to $30.1 million at September 30, 2018. Excess cash invested in short-term fixed income securities was $54.0 million at December 31, 2018, compared to $46.4 million at September 30, 2018. Excess cash invested in long-term fixed income securities was $59.6 million at December 31, 2018, compared to $0 million at September 30, 2018. 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 three months ended December 31, 2018 and 2017 is as follows:

	Three Months Ended December 31, 2018	Three Months Ended December 31, 2017
Cash Flow from Continuing Operations:		

Operating Activities	$ 168,284,763	$ (14,690,480)
Investing Activities	(67,756,269)	1,356,966
Financing Activities	59,111,274	26,292
Net Increase (Decrease) in Cash	159,639,768	(13,307,222)
Cash at Beginning of Period	30,133,213	24,838,567
Cash at End of Period	$ 189,772,981	$ 11,531,345

During the three months ended December 31, 2018, the Company generated $168.3 million in cash from operating activities, which was primarily related to the $175.0 million upfront payment received from Janssen and the premium JJDC paid on the Company's common stock during the period. These inflows were partially offset by $21.2 million of cash used for the ongoing expenses of the Company's research and development programs and general and administrative expenses. Cash used in investing activities was $67.8 million, which was primarily related to purchases of fixed-income investments of $69.3 million. Cash provided by financing activities of $59.1 million was driven by the equity investment the Company received from JJDC during the period.

During the three months ended December 31, 2017, the Company used $14.7 million in cash from operating activities for the on-going expenses of its research and development programs and general and administrative expenses. Cash provided by investing activities was $1.4 million, which was primarily related to maturities of fixed-income investments of $6.5 million offset by purchases of fixed-income securities of $5.0 million. Cash provided by financing activities of $26,292 was driven by the $0.2 million of cash generated from warrant exercises offset by $0.2 million of payments against a note payable.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements or relationships.

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, 2018, filed with the Securities and Exchange Commission on December 11, 2018.

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, 2018. For an update to those disclosures, see Note 7 to the Consolidated Financial Statements under the heading “Litigation” in Part I, Item 1.

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, 2018. 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, 2018, 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

All information under this Item has been previously reported on our Current Reports on Form 8-K.

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	License Agreement between Arrowhead Pharmaceuticals, Inc. and Janssen Pharmaceuticals, Inc., dated October 3, 2018*†
10.2	Research Collaboration and Option Agreement between Arrowhead Pharmaceuticals, Inc. and Janssen Pharmaceuticals, Inc., dated October 3, 2018*†
10.3	Stock Purchase Agreement between Arrowhead Pharmaceuticals, Inc. and Johnson & Johnson Innovation-JJDC, Inc., dated October 3, 2018*
10.4	Registration Rights Agreement between Arrowhead Pharmaceuticals, Inc. and Johnson & Johnson Innovation-JJDC, Inc., dated October 3, 2018*
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	The following materials from Registrant's Quarterly Report on Form 10-Q for the quarter ended December 31, 2018, formatted in XBRL (Extensible Business Reporting Language): (1) Consolidated Balance Sheets, (2) Consolidated Statements of Operations, (3) Consolidated Statement of Stockholders' Equity, (4) Consolidated Statements of Cash Flows, and (5) Notes to Consolidated Financial Statements. **

*Filed herewith

**Furnished herewith

† Confidential treatment has been requested with respect to certain portions of this exhibit. Omitted portions have been filed

separately with the Securities and Exchange Commission.

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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: February 7, 2019

ARROWHEAD
PHARMACEUTICALS, INC.

By: /s/ Kenneth A. Myszkowski
Kenneth A. Myszkowski
Chief Financial Officer

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