

# ARROWHEAD PHARMACEUTICALS, INC.

## FORM 10-Q (Quarterly Report)

Filed 02/09/18 for the Period Ending 12/31/17

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CIK	0000879407
Symbol	ARWR
SIC Code	2834 - Pharmaceutical Preparations
Industry	Biotechnology & Medical Research
Sector	Healthcare
Fiscal Year	09/30

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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, DC 20549

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**FORM 10-Q**

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(Mark One)

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

For the quarterly period ended December 31, 2017

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

Commission file number 001-38042

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**ARROWHEAD PHARMACEUTICALS, INC.**

(Exact name of registrant as specified in its charter)

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**Delaware**  
(State of incorporation)

**46-0408024**  
(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)

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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 filer	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/> (Do not check if a smaller reporting company)	Smaller reporting company	<input type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 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 7, 2018 was 86,787,566.

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## PART I. FINANCIAL INFORMATION

## ITEM 1. FINANCIAL STATEMENTS

Arrowhead Pharmaceuticals, Inc.  
Consolidated Balance Sheets

	(unaudited)	
	December 31, 2017	September 30, 2017
<b>ASSETS</b>		
CURRENT ASSETS		
Cash and cash equivalents	\$ 11,531,345	\$ 24,838,567
Accounts receivable	149,931	67,797
Prepaid expenses	651,239	867,363
Other current assets	1,604,986	1,359,638
Short term investments	39,169,376	40,769,539
<b>TOTAL CURRENT ASSETS</b>	<b>53,106,877</b>	<b>67,902,904</b>
Property and equipment, net	14,932,366	15,513,019
Intangible assets, net	20,039,332	20,464,439
Other assets	141,918	141,918
<b>TOTAL ASSETS</b>	<b>\$ 88,220,493</b>	<b>\$ 104,022,280</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
CURRENT LIABILITIES		
Accounts payable	\$ 5,707,047	\$ 4,076,514
Accrued expenses	3,478,512	4,564,507
Accrued payroll and benefits	1,936,024	3,399,679
Deferred rent	440,580	440,580
Deferred revenue	1,875,001	5,269,741
Derivative liabilities	20,445	695,114
Note Payable	212,233	208,506
Other current liabilities	46,407	46,407
<b>TOTAL CURRENT LIABILITIES</b>	<b>13,716,249</b>	<b>18,701,048</b>
LONG-TERM LIABILITIES		
Deferred rent, net of current portion	1,834,392	1,929,052
Note Payable, net of current portion	2,270,542	2,325,018
Other non-current liabilities	200,000	200,000
<b>TOTAL LONG-TERM LIABILITIES</b>	<b>4,304,934</b>	<b>4,454,070</b>
Commitments and contingencies (Note 7)		
STOCKHOLDERS' EQUITY		
Arrowhead Pharmaceuticals, Inc. stockholders' equity:		
Common stock, \$0.001 par value; 145,000,000 shares authorized; 74,917,876 and 74,785,426 shares issued and outstanding as of December 31, 2017 and September 30, 2017, respectively	167,287	167,155
Additional paid-in capital	516,577,723	514,037,301
Accumulated other comprehensive income (loss)	23,704	33,232
Accumulated deficit	(446,014,216)	(432,815,338)
Total Arrowhead Pharmaceuticals, Inc. stockholders' equity	70,754,498	81,422,350
Noncontrolling interest	(555,188)	(555,188)
<b>TOTAL STOCKHOLDERS' EQUITY</b>	<b>70,199,310</b>	<b>80,867,162</b>
<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY</b>	<b>\$ 88,220,493</b>	<b>\$ 104,022,280</b>

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

**Arrowhead Pharmaceuticals, Inc.**  
**Consolidated Statements of Operations and Comprehensive Loss**  
**(unaudited)**

	Three Months ended December 31, 2017	Three Months ended December 31, 2016
<b>REVENUE</b>	<b>\$ 3,509,821</b>	<b>\$ 4,365,496</b>
<b>OPERATING EXPENSES</b>		
Research and development	8,431,903	9,527,051
Salaries and payroll-related costs	3,986,367	4,276,105
General and administrative expenses	1,671,185	1,854,174
Stock-based compensation	2,092,541	2,424,442
Depreciation and amortization	1,141,173	1,185,611
TOTAL OPERATING EXPENSES	<u>17,323,169</u>	<u>19,267,383</u>
OPERATING LOSS	(13,813,348)	(14,901,887)
<b>OTHER INCOME (EXPENSE)</b>		
Interest income (expense), net	163,731	25,148
Change in value of derivatives	450,739	1,483,831
Other income (expense)	-	1,306,800
TOTAL OTHER INCOME (EXPENSE)	<u>614,470</u>	<u>2,815,779</u>
LOSS BEFORE INCOME TAXES	<u>(13,198,878)</u>	<u>(12,086,108)</u>
Provision for income taxes	-	-
NET LOSS	<u>(13,198,878)</u>	<u>(12,086,108)</u>
NET LOSS PER SHARE - BASIC & DILUTED	<u>\$ (0.18)</u>	<u>\$ (0.17)</u>
Weighted average shares outstanding - basic and diluted	<u>74,831,415</u>	<u>71,444,600</u>
OTHER COMPREHENSIVE INCOME (LOSS), NET OF TAX:		
Foreign Currency Translation Adjustments	(9,528)	(192,608)
COMPREHENSIVE LOSS	<u>\$ (13,208,406)</u>	<u>\$ (12,278,716)</u>

*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
<b>Balance at September 30, 2017</b>	74,785,426	\$ 167,155	\$ 514,037,301	\$ 33,232	\$ (432,815,338)	\$ (555,188)	\$ 80,867,162
Stock-based compensation	-	-	2,092,541	-	-	-	2,092,541
Exercise of warrants	122,450	122	447,891	-	-	-	448,013
Common stock- Restricted Stock Units vesting	10,000	10	(10)	-	-	-	-
Foreign currency translation adjustments	-	-	-	(9,528)	-	-	(9,528)
Net loss for the three months ended December 31, 2017	-	-	-	-	(13,198,878)	-	(13,198,878)
<b>Balance at December 31, 2017</b>	<u>74,917,876</u>	<u>\$ 167,287</u>	<u>\$ 516,577,723</u>	<u>\$ 23,704</u>	<u>\$ (446,014,216)</u>	<u>\$ (555,188)</u>	<u>\$ 70,199,310</u>

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

**Arrowhead Pharmaceuticals, Inc.**  
**Consolidated Statements of Cash Flows**  
**(unaudited)**

	<u>Three Months ended December 31, 2017</u>	<u>Three Months ended December 31, 2016</u>
<b>CASH FLOWS FROM OPERATING ACTIVITIES:</b>		
Net loss	\$ (13,198,878)	\$ (12,086,108)
Change in value of derivatives	(450,739)	(1,483,831)
Stock-based compensation	2,092,541	2,424,442
Depreciation and amortization	1,141,173	1,185,611
Amortization/(accretion) of note premiums	107,783	-
Changes in operating assets and liabilities:		
Accounts receivable	(82,134)	15,000
Prepaid expenses and Other Current Assets	(29,223)	1,027,021
Deferred revenue	(3,394,740)	25,652,536
Accounts payable	1,630,533	(4,648,013)
Accrued expenses	(2,550,703)	(1,850,996)
Other	43,907	(235,471)
<b>NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES</b>	<b>(14,690,480)</b>	<b>10,000,191</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES:</b>		
Purchases of property and equipment	(135,414)	(5,296,653)
Purchases of marketable securities	(5,018,040)	-
Proceeds from sale of marketable securities	6,510,420	-
<b>NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES</b>	<b>1,356,966</b>	<b>(5,296,653)</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES:</b>		
Principal payments on notes payable	(197,790)	(47,277)
Payments of taxes for net share settled restricted stock unit issuances	-	(417,140)
Proceeds from the exercises of warrants and stock options	224,082	-
Proceeds from the issuance of common stock	-	12,500,000
<b>NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES</b>	<b>26,292</b>	<b>12,035,583</b>
<b>NET INCREASE (DECREASE) IN CASH</b>	<b>(13,307,222)</b>	<b>16,739,121</b>
<b>CASH AT BEGINNING OF PERIOD</b>	<b>24,838,567</b>	<b>85,366,448</b>
<b>CASH AT END OF PERIOD</b>	<b>\$ 11,531,345</b>	<b>\$ 102,105,569</b>
Supplementary disclosures:		
Interest Paid	\$ (44,722)	\$ (48,195)
Property and Equipment expenditures included in accounts payable and accrued expenses	\$ -	\$ (1,041,276)

*The accompanying notes are an integral part of these unaudited 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. Deemed to be one of the most important recent discoveries in life science with the potential to transform medicine, the discoverers of RNAi were awarded a Nobel Prize in 2006 for their work. Arrowhead’s RNAi-based therapeutics leverage this natural pathway of gene silencing. The company’s pipeline includes ARO-HBV for chronic hepatitis B virus, ARO-AAT for liver disease associated with alpha-1 antitrypsin deficiency (AATD), ARO-APOC3 and ARO-ANG3 for hypertriglyceridemia, ARO-Lung1 for an undisclosed pulmonary target, ARO-HIF2 for renal cell carcinoma, ARO-F12 for hereditary angioedema and thromboembolic disorders, and ARO-AMG1 for an undisclosed genetically validated cardiovascular target under a license and collaboration agreement with Amgen, Inc., a Delaware corporation (“Amgen”). ARO-LPA (AMG 890) for cardiovascular disease was out-licensed to Amgen in 2016.

With regard to key recent developments, during the first quarter of fiscal 2018, the Company filed Clinical Trial Applications (CTAs) for ARO-AAT and ARO-HBV to begin a phase 1 clinical study and a phase 1 / 2 clinical study for each program, respectively. Additionally, on January 22, 2018, the Company sold 11,500,000 shares of Common Stock in a fully underwritten public offering, at a public offering price of \$5.25 per share. Net proceeds to the Company were approximately \$56.7 million after deducting underwriting commissions and discounts and other offering expenses payable by the Company.

*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, 2017, the Company had \$11.5 million in cash, and \$39.2 million in short-term investments, to fund operations. During the three months ended December 31, 2017, the Company’s cash and investments balance decreased by \$ 14.9 million, which was primarily the result of cash outflows of \$14.7 million related to operating activities.

On January 22, 2018, the Company sold 11,500,000 shares of Common Stock in a fully underwritten public offering, at a public offering price of \$5.25 per share. Net proceeds to the Company were approximately \$56.7 million after deducting underwriting commissions and discounts and other offering expenses payable by the Company. The Company believes its current financial resources are sufficient to fund its operations through at least the next twelve months.

*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. 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 our consolidated financial statements and the notes thereto contained in our Annual Report on Form 10-K for the year ended September 30, 2017.

**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, 2017 and September 30, 2017.

**Concentration of Credit Risk**—The Company maintains several bank accounts 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 deposits, 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 certain 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 and equity 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 and equity 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, 2017 and 2016, all of 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, 2017 and September 30, 2017.

Revenue Recognition— Revenue from product sales is recorded when persuasive evidence of an arrangement exists, title has passed and delivery has occurred, a price is fixed and determinable, and collection is reasonably assured.

The Company may generate revenue from technology licenses, collaborative research and development arrangements, research grants and product sales. Revenue under technology licenses and collaborative agreements typically consists of nonrefundable and/or guaranteed technology license fees, collaborative research funding, manufacturing and development services and various milestone and future product royalty or profit-sharing payments. These agreements are generally referred to as multiple element arrangements.

The Company applies the accounting standard on revenue recognition for multiple element arrangements. The fair value of deliverables under the arrangement may be derived using a best estimate of selling price if vendor specific objective evidence and third-party evidence is not available. Deliverables under the arrangement will be separate units of accounting if a delivered item has value to the customer on a standalone basis, if the arrangement includes a general right of return for the delivered item, and if delivery or performance of the undelivered item is considered probable and substantially in the Company's control.

The Company recognizes upfront license payments as revenue upon delivery of the license only if the license has standalone value from any undelivered performance obligations and that value can be determined. The undelivered performance obligations typically include manufacturing or development services or research and/or steering committee services. If the fair value of the undelivered performance obligations can be determined, then these obligations would be accounted for separately. If the license is not considered to have standalone value, then the license and other undelivered performance obligations would be accounted for as a single unit of accounting. In this case, the license payments and payments for performance obligations are recognized as revenue over the estimated period of when the performance obligations are performed or deferred indefinitely until the undelivered performance obligation is determined.

Whenever the Company determines that an arrangement should be accounted for as a single unit of accounting, the Company determines the period over which the performance obligations will be performed and revenue will be recognized. Revenue is recognized using a proportional performance or straight-line method. The proportional performance method is used when the level of effort required to complete performance obligations under an arrangement can be reasonably estimated. The amount of revenue recognized under the proportional performance method is determined by multiplying the total payments under the contract, excluding royalties and payments contingent upon achievement of milestones, by the ratio of the level of effort performed to date to the estimated total level of effort required to complete performance obligations under the arrangement. If the Company cannot reasonably estimate the level of effort to complete performance obligations under an arrangement, the Company recognizes revenue under the arrangement on a straight-line basis over the period the Company is expected to complete its performance obligations. 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 under an arrangement.

Many of the Company's collaboration agreements entitle the Company to additional payments upon the achievement of development, regulatory and sales performance-based milestones. If the achievement of a milestone is considered probable at the inception of the collaboration, the related milestone payment is included with other collaboration consideration, such as upfront fees and research funding, in the Company's revenue calculation. Typically these milestones are not considered probable at the inception of the collaboration. As such, milestones will typically be recognized in one of two ways depending on the timing of when the

milestone is achieved. If the milestone is achieved during the performance period, the Company will only recognize revenue to the extent of the proportional performance achieved at that date, or the proportion of the straight-line basis achieved at that date, and the remainder will be recorded as deferred revenue to be amortized over the remaining performance period. If the milestone is achieved after the performance period has completed and all performance obligations have been delivered, the Company will recognize the milestone payment as revenue in its entirety in the period the milestone was achieved.

Deferred revenue will be classified as part of Current or Long-Term Liabilities in the accompanying Consolidated Balance Sheets based on the Company's estimate of the portion of the performance obligations regarding that revenue will be completed within the next 12 months divided by the total performance period estimate. 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.

**Earnings (Loss) per Share**—Basic earnings (loss) per share is computed using the weighted-average number of common shares outstanding during the period. Diluted earnings (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 and warrants to purchase Common Stock of the Company. All outstanding stock options, restricted stock units and warrants for the three months ended December 31, 2017 and 2016 have been excluded from the calculation of Diluted earnings (loss) per share 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.

**Derivative Assets and Liabilities** – The Company accounts for warrants and other derivative financial instruments as either equity or assets/liabilities based upon the characteristics and provisions of each instrument. Warrants classified as equity are recorded as Additional Paid-In Capital on the Company's Consolidated Balance Sheet. Some of the Company's warrants were determined to be ineligible for equity classification due to provisions that may result in an adjustment to their exercise price. Warrants classified as derivative liabilities and other derivative financial instruments that require separate accounting as assets or liabilities are recorded on the Company's Consolidated Balance Sheet at their fair value on the date of issuance and are revalued on each subsequent balance sheet date until such instruments are exercised or expire, with any changes in the fair value between reporting periods recorded as Other Income or Expense. The Company estimates the fair value of these assets/liabilities using option pricing models that are based on the individual characteristics of the warrants or instruments on the valuation date, as well as assumptions for expected volatility, expected life and risk-free interest rate.

**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 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. The Company is evaluating the potential effects of the adoption of this update on its financial statements.

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 Madison, Wisconsin.

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 Company does not expect that ASU 2017-09 will have a material impact on the Company's results of operations and 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 “ARO-LPA (AMG-890) 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, which represents the 30-day volume-weighted average price of the Common Stock on the NASDAQ stock market over the 30 trading days preceding the Effective Date, as defined in the ARO-AMG1 Agreement. 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 ARO-LPA (AMG-890) Agreement.

Under the terms of the ARO-AMG1 Agreement, the Company has granted an option to a worldwide, exclusive license to ARO-AMG1, an undisclosed genetically validated cardiovascular target. The collaboration between the Company and Amgen is governed by a joint steering committee comprised of an equal number of representatives from each party. The Company is also responsible for developing, optimizing and manufacturing the candidate through certain preclinical efficacy and toxicology studies to determine whether the candidate the Company has developed meets the required criteria as defined in the agreement (the “Arrowhead Deliverable”). If this is achieved, Amgen will then have the option to an exclusive license for the intellectual property generated through the Company’s development efforts, and will likely assume all development, regulatory and commercialization efforts for the

candidate upon the option exercise. The Company has determined that the significant deliverables under the ARO-AMG1 Agreement include the license, the joint research committee and the development and manufacturing activities toward achieving the Arrowhead Deliverable. The Company also determined that, pursuant to the accounting guidance governing revenue recognition on multiple element arrangements, the license and collective undelivered activities and services do not have standalone value due to the specialized nature of the activities and services to be provided by the Company. Therefore, the deliverables are not separable and, accordingly, the license and undelivered services are being treated as a single unit of accounting. The Company will recognize revenue on a straight-line basis from October 1, 2016, through September 30, 2018. The due date for achieving the Arrowhead Deliverable is September 28, 2018. The Company received the upfront payment of \$5 million due under this agreement in September 2016. The initial \$5 million payment was recorded as Deferred Revenue, and \$0.6 million of this was amortized into Revenue during the three months ended December 31, 2017. Of the initial \$5 million payment, approximately \$1.9 million remained as Deferred Revenue as of December 31, 2017.

Under the terms of the ARO-LPA (AMG-890) Agreement, the Company has granted a worldwide, exclusive license to ARO-LPA (AMG-890). The collaboration between the Company and Amgen is governed by a joint research committee comprised of an equal number of representatives from each party, however Amgen has the final decision making authority regarding ARO-LPA (AMG-890) in this committee. The Company is also responsible for assisting Amgen in the oversight of certain development and manufacturing activities, most of which are to be covered at Amgen's cost. The Company has determined that the significant deliverables under the ARO-LPA (AMG-890) Agreement include the license and the oversight of certain of the development and manufacturing activities. The Company also determined that, pursuant to the accounting guidance governing revenue recognition on multiple element arrangements, the license and collective undelivered activities and services do not have standalone value due to the specialized nature of the activities and services to be provided by the Company. Therefore, the deliverables are not separable and, accordingly, the license and undelivered services are being treated as a single unit of accounting. The Company recognized revenue on a straight-line basis from November 18, 2016 (the Hart-Scott-Rodino clearance date), through October 31, 2017, which was the date where the significant development and manufacturing related deliverables were completed. The Company received the upfront payment of \$30 million due under the ARO-LPA (AMG-890) Agreement in November 2016. The initial \$30 million payment was recorded as Deferred Revenue, and \$2.7 million of this was amortized into Revenue during the three months ended December 31, 2017. The initial \$30 million payment has been fully recognized, and no balance remains in Deferred Revenue as of December 31, 2017.

The Company also entered into a separate services agreement and separate statements of work with Amgen to provide certain services related to process development, manufacturing, materials supply, discovery studies, and other consulting services related to ARO-LPA (AMG 890) and ARO-AMG-1. During the three months ended December 31, 2017, these work orders generated approximately \$0.2 million of Revenue.

### NOTE 3. PROPERTY AND EQUIPMENT

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

	December 31, 2017	September 30, 2017
Computers, office equipment and furniture	\$ 600,334	\$ 600,334
Research equipment	9,796,374	9,660,960
Software	132,078	132,078
Leasehold improvements	12,208,380	12,208,380
Total gross fixed assets	22,737,166	22,601,752
Less: Accumulated depreciation and amortization	(7,804,800)	(7,088,733)
Property and equipment, net	<u>\$ 14,932,366</u>	<u>\$ 15,513,019</u>

### 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, 2017 consisted of corporate bonds with maturities remaining of less than one year. 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, 2017, all investments were classified as held-to-maturity securities.

The following tables summarize the Company's short-term investments as of December 31, 2017, and September 30, 2017.

	As of December 31, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Commercial notes (due within one year)	\$ 39,169,376	\$ —	\$ (376,905)	\$ 38,792,471

  

	As of September 30, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Commercial notes (due within one year)	\$ 40,769,539	\$ —	\$ (334,755)	\$ 40,434,784

#### 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 \$420,482. 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 \$4,397,401. Amortization expense for the three months ended December 31, 2017 and 2016 was \$425,107 and \$425,107, respectively. Amortization expense is expected to be approximately \$1,275,322 for the remainder of fiscal year 2018, \$1,700,429 in 2019, \$1,700,429 in 2020, \$1,700,429 in 2021, \$1,700,429 in 2022, \$1,700,429 in 2023, and \$10,261,864 thereafter.

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

	Intangible assets subject to amortization
Balance at September 30, 2017	\$ 20,464,439
Impairment	-
Amortization	(425,107)
Balance at December 31, 2017	\$ 20,039,332

#### NOTE 6. STOCKHOLDERS' EQUITY

At December 31, 2017, 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, 2017, 74,917,876 shares of Common Stock were outstanding. At December 31, 2017, 9,002,916 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.

On January 22, 2018, the Company sold 11,500,000 shares of Common Stock in a fully underwritten public offering, at a public offering price of \$5.25 per share. Net proceeds to the Company were approximately \$56.7 million after deducting underwriting commissions and discounts and other offering expenses payable by the Company.

The following table summarizes information about warrants outstanding at December 31, 2017:

Exercise prices	Number of Warrants	Remaining Life in Years
\$ 2.12	75,000	0.2
\$ 1.83	11,023	0.1
\$ 7.14	80,000	0.5
Total warrants outstanding	166,023	

## 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 \$27,000 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 is accounted for as a Note Payable on the Company's Consolidated Balance Sheet. Monthly rental payments, including payments of principal and interest on the Note Payable are approximately \$182,200 per month. The monthly rental payments (excluding principal and interest on the Note Payable), will increase approximately 2.5% annually.

Facility rent expense for the three months ended December 31, 2017 and 2016 was \$354,400 and \$407,500, respectively.

As of December 31, 2017, future minimum lease payments due in fiscal years under operating leases are as follows:

2018 (remainder of)	\$	1,150,247
2019		1,435,409
2020		1,044,431
2021		1,070,496
2022		1,097,168
2023 and thereafter		4,669,328
Total	\$	<u>10,467,079</u>

### Note Payable

As part of the Company's lease for its research facility in Madison, Wisconsin discussed above, the Company entered into a \$2.7 million promissory note payable with its landlord to finance certain tenant improvements made to the new facility. The note will be amortized over the 10-year term of the lease, commencing on October 1, 2016. The note bears interest at a rate of 7.1% and is payable in equal monthly installments of principal and interest.

As of December 31, 2017, future principal payments due in fiscal years under the note payable are as follows:

2018 (remainder of)	\$	157,757
2019		223,820
2020		240,258
2021		257,903
2022		276,845
2023 and thereafter		1,326,192
Total	\$	<u>2,482,775</u>

### *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 is pending 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. On October 10, 2016, the plaintiffs appealed the dismissal of the consolidated class action to the United States Court of Appeals for the Ninth Circuit. The Weisman and Johnson derivative actions have been dismissed without prejudice. The Bernstein derivative action remains pending and is stayed pending the related consolidated class action. 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, 2017, these future commitments were estimated at approximately \$13.6 million, of which approximately \$11.1 million is expected to be incurred in fiscal 2018, and \$2.5 is expected to be incurred beyond fiscal 2018.



### 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, 2017 and 2016, the Company did not reach any milestones requiring milestone payments. 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, 2017, 2,114,286 and 6,329,079 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, 2017, there were options granted and outstanding to purchase 2,114,286 and 2,945,999 shares of Common Stock under the 2004 Equity Incentive Plan and the 2013 Incentive Plan, respectively, and there were 3,098,000 restricted stock units granted and outstanding under the 2013 Incentive Plan. Also, as of December 31, 2017, there were 557,050 shares reserved for options and 2,500 restricted stock units issued as inducement grants to new employees outside of equity compensation plans. During the three months ended December 31, 2017, no options or restricted stock units were granted under the 2004 Equity Incentive Plan, no options or restricted stock units were granted under the 2013 Incentive Plan, and 115,000 options and 2,500 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, 2017	5,549,543	\$ 6.00		
Granted	115,000	3.60		
Cancelled	(47,207)	13.70		
Exercised	—	—		
Balance At December 31, 2017	<u>5,617,336</u>	<u>\$ 5.89</u>	6.3 years	\$ 2,474,103
Exercisable At December 31, 2017	<u>4,169,205</u>	<u>\$ 6.40</u>	5.6 years	\$ 1,301,464

Stock-based compensation expense related to stock options for the three months ended December 31, 2017 and 2016 was \$900,659 and \$1,438,459, respectively. The Company does not recognize an income tax benefit as the Company is currently operating at a loss and an actual income tax benefit may not be realized. For non-qualified stock options, the loss 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, 2017 and 2016 was \$ 348,899 and \$215,539, respectively.

The intrinsic value of the options exercised during the three months ended December 31, 2017 and 2016 was \$0 and \$0, respectively.

As of December 31, 2017, the pre-tax compensation expense for all outstanding unvested stock options in the amount of approximately \$4,067,828 will be recognized in the Company's results of operations over a weighted average period of 1.8 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:

	<b>Three Months Ended December 31,</b>	
	<b>2017</b>	<b>2016</b>
Dividend yield	—	—
Risk-free interest rate	2.05 – 2.22%	1.34 – 1.44%
Volatility	110%	79%
Expected life (in years)	6.25	6.25
Weighted average grant date fair value per share of options granted	\$3.03	\$4.49

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, 2017, the Company issued 2,500 RSUs as an inducement award to a new employee outside of the equity incentive plans. 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:

	<b>Number of RSUs</b>	<b>Weighted- Average Grant Date Fair Value</b>
Unvested at September 30, 2017	3,108,000	\$ 2.45
Granted	2,500	3.51
Vested	(10,000)	5.22
Forfeited	—	—
Unvested at December 31, 2017	<u>3,100,500</u>	<u>\$ 2.44</u>

During the three months ended December 31, 2017 and 2016, the Company recorded \$1,191,882 and \$985,983 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 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, 2017, the pre-tax compensation expense for all unvested RSUs in the amount of approximately \$1,534,292 will be recognized in the Company's results of operations over a weighted average period of 1.0 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, 2017 and September 30, 2017 for assets and liabilities measured at fair value on a recurring basis:

December 31, 2017:

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
Cash and cash equivalents	\$ 11,531,345	\$ —	\$ —	\$ 11,531,345
Short-term investments	39,169,376	—	—	39,169,376
Derivative liabilities	—	—	20,445	20,445
Contingent Consideration	\$ —	\$ —	\$ —	\$ —

September 30, 2017 :

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
Cash and cash equivalents	\$ 24,838,567	\$ —	\$ —	\$ 24,838,567
Short-term investments	40,769,539	—	—	40,769,539
Derivative liabilities	—	—	695,114	695,114
Contingent Consideration	\$ —	\$ —	\$ —	\$ —

As part of a financing in January 2013, Arrowhead issued warrants to purchase up to 833,530 shares of Common Stock (the “2013 Warrants”) of which 11,023 warrants were outstanding at December 31, 2017. Further, as part of a financing in December 2012, Arrowhead issued warrants to purchase up to 912,543 shares of Common Stock (the “2012 Warrants”) of which warrants to exercise 143,811 shares remained unexercised and were cancelled at their expiration during the three months ended December 31, 2017. Each of the Warrants contains a mechanism to adjust the strike price upon the issuance of certain dilutive equity securities. If during the terms of the Warrants, the Company issues Common Stock at a price lower than the exercise price for the Warrants, the exercise price would be reduced to the amount equal to the issuance price of the Common Stock. As a result of these features, the Warrants are subject to derivative accounting as prescribed under ASC 815. Accordingly, the fair value of the Warrants on the date of issuance was estimated using an option pricing model and recorded on the Company’s Consolidated Balance Sheet as a derivative liability. The fair value of the Warrants is estimated at the end of each reporting period and the change in the fair value of the Warrants is recorded as a non-operating gain or loss as change in value of derivatives in the Company’s Consolidated Statement of Operations and Comprehensive Loss. During the three months ended December 31, 2017 and 2016, the Company recorded a non-cash gain/(loss) from the change in fair value of the derivative liability of \$450,739 and \$1,454,831, respectively.

The assumptions used in valuing the derivative liability were as follows:

<b>2013 Warrants</b>	<u>December 31, 2017</u>	<u>September 30, 2017</u>
Risk-free interest rate	1.01%	1.07%
Expected life	0.1 Years	0.3 Years
Dividend yield	—	—
Volatility	110%	79%

The following is a reconciliation of the derivative liability related to these Warrants:

Value at September 30, 2017	\$	695,114
Issuance of instruments		—
Change in value		(450,739)
Net settlements		(223,930)
Value at December 31, 2017	\$	<u>20,445</u>

The derivative assets/liabilities are estimated using option pricing models that are based on the individual characteristics of the warrants or instruments on the valuation date, as well as assumptions for expected volatility, expected life and risk-free interest rate. Changes in the assumptions used could have a material impact on the resulting fair value. The primary input affecting the value of the Company's derivatives liabilities is the Company's stock price. Other inputs have a comparatively insignificant effect.

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, 2017 and September 30, 2017.

#### **NOTE 10. SUBSEQUENT EVENTS**

On January 22, 2018, the Company sold 11,500,000 shares of Common Stock in a fully underwritten public offering, at a public offering price of \$5.25 per share. Net proceeds to the Company were approximately \$56.7 million after deducting underwriting commissions and discounts and other offering expenses payable by the Company.

## 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 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. Deemed to be one of the most important recent discoveries in life science with the potential to transform medicine, the discoverers of RNAi were awarded a Nobel Prize in 2006 for their work. Arrowhead's RNAi-based therapeutics leverage this natural pathway of gene silencing. The company's pipeline includes ARO-HBV for chronic hepatitis B virus, ARO-AAT for liver disease associated with alpha-1 antitrypsin deficiency (AATD), ARO-APOC3 and ARO-ANG3 for hypertriglyceridemia, ARO-Lung1 for an undisclosed pulmonary target, ARO-HIF2 for renal cell carcinoma, ARO-F12 for hereditary angioedema and thromboembolic disorders, and ARO-AMG1 for an undisclosed genetically validated cardiovascular target under a license and collaboration agreement with Amgen, Inc., a Delaware corporation ("Amgen"). ARO-LPA (AMG 890) for cardiovascular disease was out-licensed to Amgen in 2016.

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.

In fiscal 2017, Arrowhead refocused 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. As part of an R&D day in September 2017, the Company introduced its new TRiM™ platform and made the following announcements regarding its pipeline candidates:

- ARO-AAT, Arrowhead's second generation subcutaneously administered clinical candidate for the treatment of alpha-1 antitrypsin deficiency liver disease, achieved up to 92% knockdown in monkeys, thought to be near complete suppression of hepatic production of the alpha-1 antitrypsin protein. In non-GLP rat and monkey exploratory toxicology studies, no changes in clinical chemistries or histopathology suggestive of organ toxicity were observed at doses up to 300 mg/kg (100x expected human dose).
- ARO-HBV, Arrowhead's third generation subcutaneously administered clinical candidate for the treatment of chronic hepatitis B virus infection, achieved up to 99.9% knockdown of hepatitis B surface antigen (HBsAg), e-antigen (HBeAg), and HBV DNA in rodent models. In a non-GLP rat exploratory toxicology study, no changes in clinical chemistries or histopathology changes suggestive of organ toxicity were observed at doses up to 300 mg/kg (75-100x expected human dose).

- Arrowhead has expanded its cardiovascular disease portfolio utilizing the TRiM™ platform. ARO-APOC3, targeting apolipoprotein C- III, and ARO-ANG3, targeting angiotensin-like protein 3 (ANGPTL3) will be added to ARO-LPA (AMG 890) and ARO-AMG1, which are both partnered with Amgen. ARO-APOC3 and ARO-ANG3 will both be developed for the treatment of hypertriglyceridemia.
- ARO-Lung1, the first generation candidate against an undisclosed gene target in the lung, reached almost 90% target knockdown following inhaled administration in rodents.
- The ARO-HIF2 candidate targeting renal cell carcinoma achieved 85% target gene knockdown in a rodent tumor model.

During the first quarter of fiscal 2018, the Company filed Clinical Trial Applications (CTAs) for ARO-AAT and ARO-HBV to begin a phase 1 clinical study and a phase 1 / 2 clinical study for each program, respectively. These applications represent the first of five planned regulatory submissions to advance our pipeline candidates into clinical trials over the next 12 months.

The Company's collaboration agreements with Amgen also continue to progress as it relates to the ARO-LPA (AMG 890) and ARO-AMG1 candidates. Under the terms of the agreements taken together, 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 ARO-LPA (AMG 890) Agreement.

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 cooperatively with such organizations on all aspects of clinical trial management, including plan design, patient recruiting, and follow up. These outside costs, relating to the preparation for and administration of clinical trials, are referred to as "program costs". If the clinical candidates progress through human testing, program costs will increase.

Net losses were \$13.2 million and \$12.1 million during the three months ended December 31, 2017 and 2016, respectively. Diluted losses per share were \$0.18 and \$0.17 during the three months ended December 31, 2017 and 2016, respectively.

The Company strengthened its liquidity and financial position through an equity offering completed in January 2018, which generated approximately \$56.7 million of net cash proceeds for the Company. These cash proceeds secured the funding needed to continue to advance our preclinical and clinical candidates. The Company had \$11.5 million of cash and cash equivalents, \$39.2 million of short-term investments and \$88.2 million of total assets as of December 31, 2017, as compared to \$24.8 million, \$40.8 million and \$104.0 million as of September 30, 2017, respectively. Based upon the Company's current cash 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 from product sales is recorded when persuasive evidence of an arrangement exists, title has passed and delivery has occurred, a price is fixed and determinable, and collection is reasonably assured.

The Company may generate revenue from technology licenses, collaborative research and development arrangements, research grants and product sales. Revenue under technology licenses and collaborative agreements typically consists of nonrefundable and/or guaranteed technology license fees, collaborative research funding, manufacturing and development services and various milestone and future product royalty or profit-sharing payments. These agreements are generally referred to as “multiple element arrangements”.

The Company applies the accounting standard on revenue recognition for multiple element arrangements. The fair value of deliverables under the arrangement may be derived using a best estimate of selling price if vendor specific objective evidence and third-party evidence is not available. Deliverables under the arrangement will be separate units of accounting if a delivered item has value to the customer on a standalone basis and if the arrangement includes a general right of return for the delivered item, delivery or performance of the undelivered item is considered probable and substantially in the Company’s control.

The Company recognizes upfront license payments as revenue upon delivery of the license only if the license has standalone value from any undelivered performance obligations and that value can be determined. The undelivered performance obligations typically include manufacturing or development services or research and/or steering committee services. If the fair value of the undelivered performance obligations can be determined, then these obligations would be accounted for separately. If the license is not considered to have standalone value, then the license and other undelivered performance obligations would be accounted for as a single unit of accounting. In this case, the license payments and payments for performance obligations are recognized as revenue over the estimated period of when the performance obligations are performed or deferred indefinitely until the undelivered performance obligation is determined.

Whenever the Company determines that an arrangement should be accounted for as a single unit of accounting, the Company determines the period over which the performance obligations will be performed and revenue will be recognized. Revenue is recognized using a proportional performance or straight-line method. The proportional performance method is used when the level of effort required to complete performance obligations under an arrangement can be reasonably estimated. The amount of revenue recognized under the proportional performance method is determined by multiplying the total payments under the contract, excluding royalties and payments contingent upon achievement of milestones, by the ratio of the level of effort performed to date to the estimated total level of effort required to complete performance obligations under the arrangement. If the Company cannot reasonably estimate the level of effort to complete performance obligations under an arrangement, the Company recognizes revenue under the arrangement on a straight-line basis over the period the Company is expected to complete its performance obligations. 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 under an arrangement.

Many of the Company’s collaboration agreements entitle the Company to additional payments upon the achievement of development, regulatory and sales performance-based milestones. If the achievement of a milestone is considered probable at the inception of the collaboration, the related milestone payment is included with other collaboration consideration, such as upfront fees and research funding, in the Company’s revenue calculation. Typically, these milestones are not considered probable at the inception of the collaboration. As such, milestones will typically be recognized in one of two ways depending on the timing of when the milestone is achieved. If the milestone is achieved during the performance period, then the Company will only recognize revenue to the extent of the proportional performance achieved at that date, or the proportion of the straight-line basis achieved at that date, and the remainder will be recorded as deferred revenue to be amortized over the remaining performance period. If the milestone is achieved after the performance period has completed and all performance obligations have been delivered, then the Company will recognize the milestone payment as revenue in its entirety in the period the milestone was achieved.

Deferred revenue will be classified as part of Current or Long-Term Liabilities in the accompanying Consolidated Balance Sheets based on the Company’s estimate of the portion of the performance obligations regarding that revenue will be completed within the next 12 months divided by the total performance period estimate. 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 license agreements 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. 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.

### *Derivative Assets and Liabilities*

We account for warrants and other derivative financial instruments as either equity or assets/liabilities based upon the characteristics and provisions of each instrument. Warrants classified as equity are recorded as additional paid-in capital on our Consolidated Balance Sheet and no further adjustments to their valuation are made. Some of our warrants were determined to be ineligible for equity classification because of provisions that may result in an adjustment to their exercise price. Warrants classified as derivative liabilities and other derivative financial instruments that require separate accounting as assets or liabilities are recorded on our Consolidated Balance Sheet at their fair value on the date of issuance and are revalued on each subsequent balance sheet date until such instruments are exercised or expire, with any changes in the fair value between reporting periods recorded as other income or expense. We estimate the fair value of these assets/liabilities using option pricing models that are based on the individual characteristics of the warrants or instruments on the valuation date, as well as assumptions for expected volatility, expected life and risk-free interest rate. Changes in the assumptions used could have a material impact on the resulting fair value. The primary input affecting the value of our derivatives liabilities is the Company's stock price.

### *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 summarize our results of operations for the following periods indicated:

	Three Months Ended December 31, 2017	Three Months Ended December 31, 2016
Revenue	\$ 3,509,821	\$ 4,365,496
Operating Loss	(13,813,348)	(14,901,887)
Net Loss	(13,198,878)	(12,086,108)
Loss per Share (Basic and Diluted)	\$ (0.18)	\$ (0.17)

Our operating results were relatively consistent period over period. Operating Expenses were reduced given our clinical trial discontinuation in 2016, however this reduction was more than offset by reductions in Other Income and Revenue discussed further below.

### Revenue

Total revenue was \$3,509,821 and \$4,365,496 for the three months ended December 31, 2017 and 2016, respectively. Revenue in the current period is primarily related to the upfront payments received from Amgen in 2016 that we are recognizing as Revenue as performance is completed for the ARO-LPA (AMG-890) and ARO-AMG1 Agreements. The decrease in our Revenue during the three months ended December 31, 2017 was driven by a reduction in the amount of Revenue recognized associated with the \$30 million upfront payment received from Amgen associated with the ARO-LPA (AMG-890) Agreement. We recognized Revenue from the ARO-LPA (AMG-890) Agreement on a straight-line basis as performance was completed from November 2016 thru October 2017.

Under the terms of the ARO-LPA (AMG 890) Agreement, the Company has granted a worldwide, exclusive license to ARO-LPA (AMG 890). The collaboration between the Company and Amgen is governed by a joint research committee comprised of an equal number of representatives from each party; however, Amgen has the final decision making authority regarding ARO-LPA (AMG 890) in this committee. The Company is also responsible for assisting Amgen in the oversight of certain development and manufacturing activities, most of which are to be covered at Amgen's cost. The Company has determined that the significant deliverables under the ARO-LPA (AMG 890) Agreement include the license and the oversight of certain of the development and manufacturing activities. The Company also determined that, pursuant to the accounting guidance governing revenue recognition on multiple element arrangements, the license and collective undelivered activities and services do not have standalone value due to the specialized nature of the activities and services to be provided by the Company. Therefore, the deliverables are not separable and, accordingly, the license and undelivered services are being treated as a single unit of accounting. The Company recognized revenue on a straight-line basis from November 18, 2016 (the Hart-Scott-Rodino clearance date) through October 31, 2017, which is the date where the significant development and manufacturing related deliverables were completed. The Company received the upfront payment of \$30 million due under this agreement in November 2016. The initial \$30 million payment was recorded as Deferred Revenue, and \$2.7 million of this was amortized into Revenue during the three months ended December 31, 2017. During the three months ended December 31, 2016, \$3.7 million of this payment was amortized into Revenue. The initial \$30 million payment has been fully recognized, and no balance remains in Deferred Revenue as of December 31, 2017.

Under the terms of the ARO-AMG1 Agreement, the Company has granted an option to a worldwide, exclusive license to ARO-AMG1, an undisclosed genetically validated cardiovascular target. The collaboration between the Company and Amgen is governed by a joint steering committee comprised of an equal number of representatives from each party. The Company is also responsible for developing, optimizing and manufacturing the candidate through certain preclinical efficacy and toxicology studies to determine whether the candidate the Company has developed meets the required criteria as defined in the agreement (the "Arrowhead Deliverable"). If this is achieved, Amgen will then have the option to an exclusive license for the intellectual property generated through the Company's development efforts, and will likely assume all development, regulatory and commercialization efforts for the candidate upon the option exercise. The Company has determined that the significant deliverables under the ARO-AMG1 Agreement include the license, the joint research committee and the development and manufacturing activities toward achieving the Arrowhead Deliverable. The Company also determined that, pursuant to the accounting guidance governing revenue recognition on multiple element arrangements, the license and collective undelivered activities and services do not have standalone value due to the specialized nature of the activities and services to be provided by the Company. Therefore, the deliverables are not separable and, accordingly, the license and undelivered services are being treated as a single unit of accounting. The Company will recognize revenue on a straight-line basis from October 1, 2016, through September 30, 2018. The due date for achieving the Arrowhead Deliverable is September 28, 2018. The Company received the upfront payment of \$5 million due under this agreement in September 2016. The initial \$5 million payment was recorded as Deferred Revenue, and \$0.6 million of this was amortized into Revenue during the three months ended December 31, 2017. During the three months ended December 31, 2016, \$0.6 million of this payment was amortized into Revenue. Of the initial \$5 million payment, \$1.9 million remains in Deferred Revenue as of December 31, 2017.

The Company also entered into a separate services agreement and separate statements of work with Amgen to provide certain services related to process development, manufacturing, materials supply, discovery studies, and other consulting services related to ARO-LPA (AMG 890) and ARO-AMG-1. During the three months ended December 31, 2017, these work orders generated approximately \$0.2 million of Revenue.

### 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, 2017 and 2016 are shown in the tables below.

#### Research and Development Expenses – Three months ended December 31, 2017 compared to the three months ended December 31, 2016

R&D expenses are related to the Company's on-going 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. The following table provides details of research and development expense for the periods indicated:

(in thousands, except percentages)

	Three Months Ended December 31, 2017		Three Months Ended December 31, 2016		Increase (Decrease)	
	\$	% of Expense Category	\$	% of Expense Category	\$	%
Laboratory supplies & services	\$ 947	11%	\$ 837	9%	\$ 110	13%
In vivo studies	680	8%	461	5%	219	48%
Outside labs & contract services	73	1%	132	1%	(59)	-45%
Toxicity/efficacy studies	1,884	22%	515	5%	1,369	266%
Drug manufacturing	3,345	40%	2,225	23%	1,120	50%
Clinical trials	821	10%	4,679	49%	(3,858)	-82%
License, royalty & milestones	19	0%	-	0%	19	N/A
Facilities and related	594	7%	592	6%	2	0%
Other research expenses	69	1%	86	1%	(17)	-20%
Total	\$ 8,432	100%	\$ 9,527	100%	\$ (1,095)	-11%

Laboratory supplies and services expense increased by \$110,000 from \$837,000 during the three months ended December 31, 2016 to \$947,000 during the current period. The increase in laboratory supplies and services is a result of additional supply purchases necessary to support the expansion of the Company's preclinical pipeline as well as the development of the subcutaneous versions of its drug candidates.

In vivo studies expense increased by \$219,000 from \$461,000 during the three months ended December 31, 2016 to \$680,000 during the current period. In vivo 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 increase in in vivo studies in the current period is a result of additional discovery studies being conducted for the Company's subcutaneous candidates.

Outside labs and contract services expense decreased by \$59,000 from \$132,000 during the three months ended December 31, 2016 to \$73,000 during the current period. The decrease in outside labs and contract services in the current period is a result of additional discovery work being conducted in-house for the Company's subcutaneous candidates.

Toxicity/efficacy studies expense increased by \$1,369,000 from \$515,000 during the three months ended December 31, 2016 to \$1,884,000 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 primarily relates to toxicology studies for ARO-AAT and ARO-HBV as each candidate moves toward clinical trials. We anticipate this expense to increase as we prepare to enter clinical trials with our new subcutaneous drug candidates.

Drug manufacturing expense increased by \$1,120,000 from \$2,225,000 during the three months ended December 31, 2016 to \$3,345,000 during the current period. The increase primarily relates to manufacturing campaigns for ARO-AAT and ARO- HBV as each candidate moves toward clinical trials. We anticipate this expense to increase as we prepare to enter clinical trials with our new subcutaneous drug candidates.

Clinical trials expense decreased by \$3,858,000 from \$4,679,000 during the three months ended December 31, 2016 to \$821,000 during the current period. The decrease is primarily due to the discontinuation of our previous clinical candidates, and the close out of those studies. We anticipate this expense to increase as we prepare to enter clinical trials with our new subcutaneous drug candidates.

License, royalty and milestones expense increased by \$19,000 from \$0 during the three months ended December 31, 2016 to \$19,000 during the current period. 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 \$592,000 during the three months ended December 31, 2016 and \$594,000 during the current period. This category includes rental costs for our research and development facility in Madison, Wisconsin.

Other research expense decreased by \$17,000 from \$86,000 during the three months ended December 31, 2016 to \$69,000 during the current period. The decrease primarily relates to small non-recurring research expenses that occurred in the previous period.

**Salaries – Three months ended December 31, 2017 compared to the three months ended December 31, 2016**

The Company employs scientific, technical and administrative staff at its corporate offices and its research facility. Salaries and payroll-related expense consists of salary, bonuses, payroll taxes and related benefits. Salary and payroll-related expenses include two major categories based on the primary activities of each employee: research and development (R&D) compensation expense and general and administrative (G&A) compensation expense. The following table provides details of salary and payroll-related expenses for the periods indicated:

*(in thousands, except percentages)*

	Three Months Ended	% of	Three Months Ended	% of	Increase (Decrease)	
	December 31, 2017	Expense Category	December 31, 2016	Expense Category	\$	%
R&D - compensation-related	\$ 2,811	71%	\$ 3,249	76%	\$ (438)	-13%
G&A - compensation-related	1,175	29%	1,027	24%	148	14%
Total	\$ 3,986	100%	\$ 4,276	100%	\$ (290)	-7%

R&D compensation expense decreased by \$438,000 from \$3,249,000 during the three months ended December 31, 2016 to \$2,811,000 during the current period. The decrease is primarily due to the reduction in force in December 2016 associated with the discontinuation of our previous clinical candidates.

G&A compensation expense increased by \$148,000 from \$1,027,000 during the three months ended December 31, 2016 to \$1,175,000 during the current period. Additional headcount and salary adjustments accounted for the majority of the change in the current period.

**General & Administrative Expenses – Three months ended December 31, 2017 compared to the three months ended December 31, 2016**

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

(in thousands, except percentages)

	Three Months Ended December 31, 2017		Three Months Ended December 31, 2016		Increase (Decrease)	
	\$	% of Expense Category	\$	% of Expense Category	\$	%
Professional/outside services	\$ 665	40%	\$ 695	38%	\$ (30)	-4%
Patent expense	348	21%	287	16%	61	21%
Facilities and related	80	5%	81	4%	(1)	-1%
Travel	172	10%	180	10%	(8)	-4%
Business insurance	133	8%	148	8%	(15)	-10%
Communication and Technology	135	8%	134	7%	1	1%
Office expenses	97	6%	314	17%	(217)	-69%
Other	41	3%	15	1%	26	173%
<b>Total</b>	<b>\$ 1,671</b>	<b>100%</b>	<b>\$ 1,854</b>	<b>100%</b>	<b>\$ (183)</b>	<b>-10%</b>

Professional/outside services include legal, accounting, consulting and other outside services retained by the Company. All periods include normally recurring legal and audit expenses related to SEC compliance and other corporate matters. Professional/outside services expense decreased by \$30,000 from \$695,000 during the three months ended December 31, 2016 to \$665,000 during the current period. The decrease primarily related to small non-recurring professional fee charges incurred in 2016.

Patent expense increased by \$61,000 from \$287,000 during the three months ended December 31, 2016 to \$348,000 during the current period. The Company continues to invest in patent protection for its product candidates and other RNAi technology through patent filings in numerous countries. The Company expects to extend and maintain protection for its current portfolios, as appropriate, and file new patent applications as technologies are developed and improved. Expenses can vary from period to period as patents proceed through their prosecution life cycle.

Facilities-related expense remained consistent at \$81,000 and \$80,000 in the three months ended December 31, 2016 and 2017, respectively. Facilities expense relates to recurring expenses associated with our corporate headquarters in Pasadena, California.

Travel expense decreased by \$8,000 from \$180,000 during the three months ended December 31, 2016 to \$172,000 during the current period. Travel expense decreased due to the discontinuation of our clinical trials in November 2016 and reduction in R&D headcount. We anticipate this expense to increase as we prepare to enter clinical trials with our new subcutaneous drug candidates.

Business insurance expense decreased by \$15,000 from \$148,000 during the three months ended December 31, 2016 to \$133,000 during the current period. Business insurance costs decreased primarily due to the discontinuation of our clinical trials in November 2016.

Communication and technology was consistent at \$134,000 and \$135,000 during the three months ended December 31, 2016 and 2017, respectively. This category includes costs associated with the Company's IT infrastructure.

Office expense decreased by \$217,000 from \$314,000 during the three months ended December 31, 2016 to \$97,000 during the current period. These expenses relate to conferences/training, office supplies, miscellaneous administrative expenses, and expenses related to office expansions at our R&D facility in Madison and our corporate headquarters in Pasadena. The decrease is primarily related to moving expenses for the Company's move to its facility in Madison, Wisconsin in late 2016.

Other expense increased by \$26,000 from \$15,000 during the three months ended December 31, 2016 to \$41,000 during the current period. This category consists primarily of conference attendance fees, franchise and property tax expenses and marketing expenses. The increase in other expense is primarily related to conference attendance fees recorded during the three months ended December 31, 2017.

### ***Stock-based compensation expense***

Stock-based compensation expense, a noncash expense, was \$2,424,442 and \$2,092,541 during the three months ended December 31, 2016 and 2017, respectively. Stock-based 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 decrease in the expense is primarily due to lower grant date fair values of recent awards due to the Company's stock price.

### ***Depreciation and amortization expense***

Depreciation and amortization expense, a noncash expense, was \$1,185,611 and \$1,141,173 during the three months ended December 31, 2016 and 2017, respectively. 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 and its Pasadena corporate headquarters. The expense was relatively consistent period to period.

### ***Other income / expense***

Other income / expense was income of \$2,815,779 and \$614,470 during the three months ended December 31, 2016 and 2017, respectively. The primary component of other income during the three months ended December 31, 2016 was a change in the value of derivative liabilities related to certain warrants with a price adjustment feature, necessitating derivative accounting. The fluctuations were primarily driven by changes in the Company's stock price, which had a corresponding impact to the valuation of the underlying warrants. Additionally, the Company recorded \$1.3 million in other income due to an insurance settlement related to one of the Company's recent litigation cases. The settlement amount was received during the three months ended December 31, 2016.

### **Liquidity and Cash Resources**

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

At December 31, 2017, the Company had cash on hand of approximately \$11.5 million as compared to \$24.8 million at September 30, 2017. Excess cash invested in fixed income securities was \$39.2 million at December 31, 2017, compared to \$40.8 million at September 30, 2017. Additionally, on January 22, 2018, the Company sold 11,500,000 shares of Common Stock in a fully underwritten public offering, at a public offering price of \$5.25 per share. Net proceeds to the Company were approximately \$56.7 million after deducting underwriting commissions and discounts and other offering expenses payable by the Company. 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, 2017 and 2016 is as follows:

	<b>Three Months Ended December 31, 2017</b>	<b>Three Months Ended December 31, 2016</b>
<b>Cash Flow from Continuing Operations:</b>		
Operating Activities	\$ (14,690,480)	\$ 10,000,191
Investing Activities	1,356,966	(5,296,653)
Financing Activities	26,292	12,035,583
Net Increase (Decrease) in Cash	(13,307,222)	16,739,121
Cash at Beginning of Period	24,838,567	85,366,448
Cash at End of Period	<u>\$ 11,531,345</u>	<u>\$ 102,105,569</u>

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.

During the three months ended December 31, 2016, the Company generated \$10.0 million in cash from operating activities, primarily driven by the \$30 million upfront payment received from Amgen. This was partially offset by cash used for on-going expenses of its research and development programs and corporate overhead. Cash used in investing activities was \$5.3 million, which was primarily related to capital expenditures for leasehold improvements on the Company's Madison research facility and lab equipment purchases. Cash generated by financing activities of \$12.0 million was driven by the \$12.5 million equity investment received from Amgen, and was partially offset by cash paid for employee taxes on net share settlements of restricted stock units that vested during the period.

#### **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, 2017, filed with the Securities and Exchange Commission on December 12, 2017.

#### **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, 2017. 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, 2017. 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, 2017, 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**

<b>Exhibit Number</b>	<b>Document Description</b>
31.1	<a href="#"><u>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*</u></a>
31.2	<a href="#"><u>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*</u></a>
32.1	<a href="#"><u>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**</u></a>
32.2	<a href="#"><u>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**</u></a>
101	The following materials from Registrant's Quarterly Report on Form 10-Q for the quarter ended December 31, 2017, 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



**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 9, 2018

ARROWHEAD PHARMACEUTICALS, INC.

By: /s/ Kenneth A. Myszkowski

Kenneth A. Myszkowski  
Chief Financial Officer

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

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

1. I have reviewed this Quarterly Report on Form 10-Q of Arrowhead Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 9, 2018

/s/ CHRISTOPHER A NZALONE

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**Christopher Anzalone**  
**Chief Executive Officer**

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

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

1. I have reviewed this Quarterly Report on Form 10-Q of Arrowhead Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 9, 2018

/s/ Kenneth A. Myszkowski

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**Kenneth A. Myszkowski,**  
**Chief Financial Officer**

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

I, Christopher Anzalone, Chief Executive Officer of Arrowhead Pharmaceuticals, Inc. (the "Company"), certify, pursuant to Rule 13(a)-14(b) or Rule 15(d)-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, that (i) the Quarterly Report on Form 10-Q of the Company for the quarterly period ended December 31, 2017, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and (ii) the information contained in such Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of the Company.

Date: February 9, 2018

/s/ CHRISTOPHER A NZALONE

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**Christopher Anzalone**  
**Chief Executive Officer**

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

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

I, Kenneth A. Myszkowski, Chief Financial Officer of Arrowhead Pharmaceuticals, Inc. (the "Company"), certify, pursuant to Rule 13(a)-14(b) or Rule 15(d)-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, that (i) the Quarterly Report on Form 10-Q of the Company for the quarterly period ended December 31, 2017, fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and (ii) the information contained in such Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of the Company.

Date: February 9, 2018

/s/ Kenneth A. Myszkowski

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**Kenneth A. Myszkowski**  
**Chief Financial Officer**

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