
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

**AMENDMENT NO. 1
TO
FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

ARROWHEAD PHARMACEUTICALS, INC.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

46-0408024
(I.R.S. Employer
Identification Number)

**225 South Lake Avenue, Suite 1050
Pasadena, California 91101
(626) 304-3400**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Christopher Anzalone, Chief Executive Officer
Arrowhead Pharmaceuticals, Inc.
225 South Lake Avenue, Suite 1050
Pasadena, CA 91101
(626) 304-3400**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

**Ryan Murr
Gibson, Dunn & Crutcher LLP
555 Mission St., Suite 3000
San Francisco, CA 94105-0921
Telephone: (415) 393-8200
Facsimile: (415) 393-8306**

Approximate Date of Commencement of Proposed Sale to the Public: From time to time after this Registration Statement becomes effective, as determined by the selling stockholders.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is used to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act Registration Statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act Registration Statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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

Large accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state where the offer or sale is not permitted.

Subject to Completion, dated November 23, 2016

Prospectus

Arrowhead Pharmaceuticals, Inc.

3,002,793 shares of Common Stock

This prospectus covers the sale of an aggregate of 3,002,793 shares of our Common Stock, \$0.001 par value per share (the “Shares”), by Amgen, Inc., a Delaware corporation (“Amgen”) and collectively with any donees, pledgees, transferees or other successors-in-interest selling shares of Common Stock or interests in shares of Common Stock received after the date of this prospectus from Amgen as a gift, pledge, partnership distribution or other transfer, the “selling stockholders”). The Shares covered by this prospectus were issued to Amgen in two separate tranches in connection with two Collaboration and License Agreements entered into by and between the Company and Amgen on September 28, 2016 (the “Collaboration Agreements”) and pursuant to that certain Common Stock Purchase Agreement, dated September 28, 2016 (the “Purchase Agreement”), by and between the Company and Amgen. The first tranche of Shares, constituting 1,256,983 shares of our Common Stock, was issued to Amgen on September 28, 2016; and the second tranche of Shares, constituting 1,745,810 shares of our Common Stock, was issued to Amgen on November 18, 2016, following the termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the “HSR Act”) related to the transaction. The Purchase Agreement is filed as an exhibit to this Registration Statement, and the foregoing description of its terms is qualified in its entirety by reference thereto.

The Company will not receive any proceeds from the sale by the selling stockholders of the Shares. We are paying the cost of registering the Shares covered by this prospectus as well as various related expenses. The selling stockholders are responsible for all selling commissions, transfer taxes and other costs related to the offer and sale of their shares.

Sales of the Shares by the selling stockholders may occur at fixed prices, at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices. The selling stockholders may sell shares to or through underwriters, broker-dealers or agents, who may receive compensation in the form of discounts, concessions or commissions from the selling stockholders, the purchasers of the Shares, or both. If required, the number of shares to be sold, the public offering price of those shares, the names of any underwriters, broker-dealers or agents and any applicable commission or discount will be included in a supplement to this prospectus, called a prospectus supplement.

The Company’s Common Stock is traded on The Nasdaq Global Select Market under the symbol “ARWR.” On November 22, 2016, the closing sale price of our Common Stock on The Nasdaq Global Select Market was \$4.44 per share. Our principal executive offices are located at 225 South Lake Avenue, Suite 1050, Pasadena, California 91101, and our telephone number is (626) 304-3400.

Investing in our securities involves a high degree of risk. You should carefully consider the [Risk Factors](#) beginning on page 2 before you invest in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is November 23, 2016

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ABOUT THIS PROSPECTUS

You should read this prospectus, any applicable prospectus supplement and the information incorporated by reference in this prospectus before making an investment in the securities of Arrowhead Pharmaceuticals, Inc. See “Where You Can Find Additional Information” for more information, page 5. You should rely only on the information contained in or incorporated by reference in this prospectus or a prospectus supplement. We have not authorized anyone to provide you with different information. This prospectus may be used only in jurisdictions where offers and sales of these securities are permitted. You should assume that information contained in this prospectus, or in any document incorporated by reference, is accurate only as of any date on the front cover of the applicable document. Our business, financial condition, results of operations and prospects may have changed since that date.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains certain “forward-looking statements” as that term is defined under the Private Securities Litigation Reform Act of 1995, and we intend that such forward-looking statements be subject to the safe harbors created thereby. For this purpose, any statements contained in this prospectus 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. Factors that may cause or contribute to such differences include, but are not limited to, those discussed in more detail in Item 1 (Business) and Item 1A (Risk Factors) of Part I and Item 7 (Management’s Discussion and Analysis of Financial Condition and Results of Operations) of Part II of our most recent Annual Report on Form 10-K, factors described under the section captioned “Risk Factors” in this prospectus, as may be updated from time to time by our future filings under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and elsewhere in the documents incorporated by reference in this prospectus. Readers should carefully review these risks, as well as the additional risks described in other documents we file from time to time with the Securities and Exchange Commission (the “SEC”). 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.

ABOUT THE COMPANY

Unless otherwise noted: (1) the term “Arrowhead” refers to Arrowhead Pharmaceuticals, Inc., a Delaware corporation, formerly known as Arrowhead Research Corporation and InterActive Group, Inc., (2) the terms the “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, and (3) the term “Common Stock” refers to shares of Arrowhead’s Common Stock and the term “stockholder(s)” refers to the holders of Common Stock or securities exercisable for Common Stock.

Arrowhead develops novel drugs to treat intractable diseases by silencing the genes that cause them. Using a broad portfolio of RNA chemistries and efficient modes of delivery, Arrowhead therapies trigger the RNA interference mechanism to induce rapid, deep and durable knockdown of target genes. RNA interference (RNAi) is a mechanism present in living cells that inhibits the expression of a specific gene, thereby affecting the production of a specific protein. Arrowhead’s RNAi-based therapeutics leverage this natural pathway of gene silencing. The Company’s pipeline includes ARC-520 and ARC-521 for chronic hepatitis B virus, ARC-AAT for liver disease associated with alpha-1 antitrypsin deficiency, ARC-F12 for hereditary angioedema and thromboembolic disorders, ARC-LPA for cardiovascular disease and ARC-HIF2 for renal cell carcinoma.

On September 28, 2016, the Company entered into the Collaboration Agreements and the Purchase Agreement with Amgen. Additional information regarding these agreements can be found in our Current Report on Form 8-K filed with the SEC on September 29, 2016, which is incorporated herein by reference. The Purchase Agreement is filed as an exhibit to this Registration Statement, and the description of its terms incorporated herein is qualified in its entirety by reference thereto.

Our executive offices are located at 225 South Lake Avenue, Suite 1050, Pasadena CA 91101 and our telephone number is (626) 304-3400. Additional information regarding our company, including our audited financial statements and descriptions of our business, is contained in the documents incorporated by reference in this prospectus. See “Where You Can Find More Information” on page 5 and “Incorporation of Certain Information by Reference” on page 5.

Recent Developments

On November 15, 2016 the Company and certain executive officers were named as defendants in a putative securities class action filed in the Central District of California and captioned *Meller v. Arrowhead Pharmaceuticals, Inc., et al.*, No. 2:16-cv-08505. The plaintiff brings 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. The Company believes it has meritorious defenses and intends to vigorously defend itself in this matter. 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 this matter. The Company does not expect this to have a material effect on its Consolidated Financial Statements. With regard to legal fees, such as attorney fees related to this matter or any other legal matters, the Company’s recognizes such costs as incurred.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before making an investment decision, you should carefully consider the risks described in the sections entitled “Risk Factors” in our most recent Annual Report on Form 10-K and subsequent Quarterly Reports on Form 10-Q, as filed with the SEC, which are incorporated herein by reference in their entirety, as well as any amendment or updates to our risk factors reflected in subsequent filings with the SEC, including any applicable prospectus supplement. Our business, financial condition, results of operations or prospects could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. This prospectus and the documents incorporated herein by reference also contain forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks mentioned elsewhere in this prospectus. For more information, see the section entitled “Where You Can Find More Information.”

USE OF PROCEEDS

The proceeds from the resale of the Shares under this prospectus are solely for the account of the selling stockholders. We will not receive any proceeds from the sale of Shares under this prospectus.

SELLING STOCKHOLDER

The Company has included in this prospectus 3,002,793 shares of Common Stock that have been issued to Amgen in connection with the Company's entry into the Collaboration Agreements and the Purchase Agreement with Amgen. Pursuant to the Purchase Agreement, 1,256,983 shares of our Common Stock were issued to Amgen on September 28, 2016 and an additional 1,745,810 shares of our Common Stock were issued to Amgen on November 18, 2016, following the termination of the applicable waiting period under the HSR Act related to the transaction. In connection with the consummation of the transactions contemplated by the Purchase Agreement, we agreed to file a registration statement with the SEC covering the resale of the Shares.

The following table sets forth certain information regarding Amgen and the shares of Common Stock beneficially owned by Amgen, which is based on information that is available to us as of November 22, 2016. Amgen may offer shares of Common Stock under this prospectus from time to time and may elect to sell none, some or all of the shares of Common Stock set forth next to its name. As a result, we cannot estimate the number of shares of Common Stock Amgen will beneficially own after termination of sales under this prospectus. In addition, Amgen may have sold, transferred or otherwise disposed of all or a portion of its shares of Common Stock since the date on which it provided information for this table. We have not made independent inquiries about this.

Beneficial ownership is determined in accordance with the rules and regulations of the SEC and includes voting or investment power with respect to our Common Stock.

We are relying on written commitments from the selling stockholder to notify us of any changes in its beneficial ownership after the date it originally provided the information below. See "Plan of Distribution" below.

<u>Selling Security Holder(1)</u>	<u># of Shares held before Offering</u>	<u># Shares Being Offered</u>	<u># of Shares held after Offering(2)</u>	<u>Percentage of Shares After Offering(2)</u>
Amgen, Inc. (3)	3,002,793	3,002,793	—	—

* Less than 1%.

- (1) If required, information about other selling security holders, except for any future transferees, pledgees, donees or successors of the selling security holder named in the table above, will be set forth in a prospectus supplement or amendment to the registration statement of which this prospectus is a part. Additionally, post-effective amendments to the registration statement will be filed to disclose any material changes to the plan of distribution from the description contained in the final prospectus.
- (2) Assumes all shares of Common Stock offered by the selling stockholder hereby are sold and that the selling stockholder buys or sells no additional shares of Common Stock prior to the completion of this offering.
- (3) David Piacquad, Senior Vice President of Business Development holds investment and voting control with respect to the Shares owned by Amgen.

PLAN OF DISTRIBUTION

The selling stockholders may, from time to time, sell, transfer or otherwise dispose of any or all of their shares of Common Stock or interests in shares of Common Stock on any stock exchange, market or trading facility on which the Common Stock is traded or in private transactions. These dispositions may be at fixed prices, at prevailing market prices at the time of sale, at prices related to the prevailing market price, at varying prices determined at the time of sale, or at negotiated prices.

The selling stockholders may use any one or more of the following methods when disposing of shares or interests therein:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its own account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- short sales effected after the date the registration statement of which this prospectus is a part is declared effective by the SEC;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- through agreements between broker-dealers and the selling stockholders to sell a specified number of such shares at a stipulated price per share;

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- a combination of any such methods of sale; and
- any other method permitted by applicable law.

The selling stockholders may, from time to time, pledge or grant a security interest in some or all of the shares of Common Stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of Common Stock, from time to time, under this prospectus, or under an amendment to this prospectus under Rule 424(b) or other applicable provision of the Securities Act amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus. The selling stockholders also may transfer the shares of Common Stock in other circumstances, in which case the pledgees, transferees or other successors in interest will be the selling beneficial owners for purposes of this prospectus.

In connection with the sale of our Common Stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the Common Stock in the course of hedging the positions they assume. The selling stockholders may also sell shares of our Common Stock short and deliver these securities to close out their short positions, or loan or pledge the Common Stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into options or other transactions with broker-dealers or other financial institutions or the creation of one or more derivative securities which require the delivery to each such broker-dealer or other financial institution of shares offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The aggregate proceeds to the selling stockholders from the sale of the Common Stock offered by them will be the purchase price of the Common Stock less discounts or commissions, if any. Each of the selling stockholders reserves the right to accept and, together with its agents from time to time, to reject, in whole or in part, any proposed purchase of Common Stock to be made directly or through agents. We will not receive any of the proceeds from this offering.

The selling stockholders also may resell all or a portion of the shares of Common Stock in open market transactions in reliance upon Rule 144 under the Securities Act, provided that they meet the criteria and conform to the requirements of that rule.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the Common Stock or interests therein may be “underwriters” within the meaning of Section 2(11) of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act.

To the extent required, the shares of our Common Stock to be sold, the names of the selling stockholders, the respective purchase prices and public offering prices, the names of any agents, dealers or underwriters, and any applicable commissions or discounts with respect to a particular offer will be set forth in an accompanying prospectus supplement or, if appropriate, a post-effective amendment to the registration statement that includes this prospectus.

In order to comply with the securities laws of some states, if applicable, the Common Stock may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the Common Stock may not be sold unless it has been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

We have advised the selling stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of shares in the market and to the activities of the selling stockholders and their affiliates. In addition, to the extent applicable we will make copies of this prospectus (as it may be supplemented or amended from time to time) available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares of Common Stock against certain liabilities, including liabilities arising under the Securities Act.

We have agreed to indemnify the selling stockholders against liabilities, including liabilities under the Securities Act and state securities laws, relating to the registration of the shares offered by this prospectus.

We have agreed with the selling stockholders to keep the registration statement of which this prospectus constitutes a part effective until the earlier of (1) such time as all of the shares of Common Stock covered by this prospectus have been disposed of pursuant to and in accordance with the registration statement or (2) the date on which all of the shares of Common Stock may be sold without restriction pursuant to Rule 144 of the Securities Act.

EXPERTS

The financial statements of the Company incorporated in this prospectus by reference from the Company's Annual Report on Form 10-K for the year ended September 30, 2015 have been audited by Rose, Snyder & Jacobs, LLP as stated in their report incorporated by reference, and given upon the authority of said firm as experts in auditing and accounting.

LEGAL MATTERS

Certain legal matters, including the validity of the securities offered pursuant to this registration statement, will be passed upon for us by Gibson, Dunn & Crutcher LLP, San Francisco, California.

WHERE YOU CAN FIND MORE INFORMATION

We must comply with the informational requirements of the Exchange Act, and we are required to file reports and proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information at the Public Reference Room maintained by the SEC at 100 F Street, N.E., Washington, D.C. 20549. You may also obtain copies at the prescribed rates from the Public Reference Section of the Securities and Exchange Commission at its principal office in Washington, D.C. You may call the SEC at 1-800-SEC-0330 for further information about the public reference room. The SEC also maintains a website that contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the SEC. You may access the SEC's web site at <http://www.sec.gov>. We maintain a website at www.arrowheadpharma.com. The information contained in, or that can be accessed through, our website is not incorporated by reference herein and is not part of this prospectus.

Statements contained in this prospectus as to the contents of any contract or other document are not necessarily complete, and in each instance we refer you to the copy of the contract or document filed as an exhibit to the registration statement, each such statement being qualified in all respects by such reference.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference in this prospectus the information that we file with it. Incorporation by reference means that we can disclose important information to you by referring you to other documents that are legally considered to be part of this prospectus. Later information that we file with the SEC will automatically update and supersede the information in this prospectus, any supplement and the documents listed below. Our SEC file number is 0-21898. We incorporate by reference the specific documents listed below and any future filings made with the SEC under Section 13(a), 13(c), 14, or 15(d) of the Exchange Act, as amended, until all of the shares of common stock covered by this prospectus are sold:

- The Company's Annual Report on Form 10-K for the fiscal year ended September 30, 2015, filed on December 14, 2015;
- The Company's Quarterly Reports on Form 10-Q for the fiscal quarters ended December 31, 2015, March 31, 2016 and June 30, 2016, filed on February 9, 2016, May 10, 2016 and August 9, 2016, respectively;
- The Company's Definitive Proxy Statement on Schedule 14A, filed on January 19, 2016;
- The Company's Current Reports on Form 8-K filed on January 14, 2016, March 10, 2016, April 6, 2016, August 10, 2016, September 29, 2016 (Items 1.01, 3.02 and 9.01) and November 10, 2016;
- The description of the Company's Common Stock contained in its registration statement on Form 8-A/A (Registration No. 000-21898), filed on April 7, 2016, including any amendments or reports filed for the purpose of updating such description; and
- All documents filed by the Company pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act, after the date of the original Registration Statement and prior to effectiveness of the registration statement of which this prospectus is a part, provided that all documents "furnished" by the Company to the SEC and not "filed" are not deemed incorporated by reference herein.

We will furnish without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, a copy of any document incorporated by reference. Requests should be addressed to Corporate Secretary, 225 South Lake Avenue, Suite 1050, Pasadena, CA 91101 or may be made telephonically at (626) 304-3400.

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You should rely only on the information incorporated by reference or provided in this prospectus or any prospectus supplement. We have not authorized anyone to provide you with different information. You should not assume that the information contained in this prospectus or the accompanying prospectus supplement is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and any accompanying prospectus supplement is delivered or securities are sold on a later date.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution (1).

The following are the estimated expenses of the distribution of the shares registered hereunder on Form S-3:

Registration Fee—Securities and Exchange Commission	\$ 2,136
Accountants Fees and Expenses	\$ 5,000
Legal Fees and Expenses	\$ 5,000
Miscellaneous	<u>\$ 5,000</u>
Total	<u>\$17,136</u>

(1) The amounts set forth below, except for the SEC Registration Fee, are estimates.

Item 15. Indemnification of Directors and Officers.

The Company's Certificate of Incorporation provides for the elimination of personal monetary liability of directors to the fullest extent permissible under Delaware law. Delaware law does not permit the elimination or limitation of director monetary liability for: (i) breaches of the director's duty of loyalty to the corporation or its stockholders; (ii) acts or omissions not in good faith or involving intentional misconduct or knowing violations of law; (iii) the payment of unlawful dividends or unlawful stock repurchases or redemptions or (iv) transactions in which the director received an improper personal benefit.

Section 145 of the Delaware General Corporation Law permits a Delaware corporation to indemnify, on certain terms and conditions, any person who was or is a party or is threatened to be made a party to any threatened pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he is or was a director, officer, employee or agent of the corporation or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection with such action. The Certificate of Incorporation and Bylaws of the Company require the Company to indemnify the Company's directors and officers to the fullest extent permitted under Delaware law.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Company pursuant to the foregoing provisions, the Company has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

Item 16. Exhibit Index.

<u>Exhibit No.</u>	<u>Description</u>
3.1	Amended and Restated Certificate of Incorporation of Arrowhead Pharmaceuticals, Inc. (1)
3.2	Amended and Restated Bylaws of Arrowhead Pharmaceuticals, Inc. (1)
4.1	Form of Common Stock Certificate of Arrowhead Pharmaceuticals, Inc. (1)
5.1	Opinion of Gibson, Dunn & Crutcher LLP (2)
10.1	Common Stock Purchase Agreement, dated September 28, 2016, by and between Arrowhead Pharmaceuticals, Inc. and Amgen, Inc.**
23.1	Consent of Rose, Snyder & Jacobs, the registrant's independent registered public accounting firm (2)
23.2	Consent of Gibson, Dunn & Crutcher LLP (2)
24.1	Power of Attorney (2)

** Filed herewith.

(1) Filed as an exhibit to the registrant's Current Report on Form 8-K, filed on April 6, 2016, and incorporated by reference herein.

(2) Filed as an exhibit to the registrant's Registration Statement on Form S-3 (File No. 333-214311), filed on October 28, 2016 and being amended hereby.

Item 17. Undertakings.

Item 512(a) of Regulation S-K. The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

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- (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
- (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, That:

Paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:
 - (A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in this registration statement; and
 - (B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of this Registration Statement or made in any such document immediately prior to such effective date.
- (5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:

The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
- (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
- (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
- (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

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Item 512(b) of Regulation S-K. The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

Item 512(h) of Regulation S-K. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act, and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

Item 512(i) of Regulation S-K. The undersigned registrant hereby undertakes that:

- (i) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b) (1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.
- (ii) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Pasadena, state of California, on November 23, 2016.

ARROWHEAD PHARMACEUTICALS, INC.

By: /s/ Christopher Anzalone
Christopher Anzalone
Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Christopher Anzalone</u> Christopher Anzalone	Chief Executive Officer and President and Director (Principal Executive Officer)	November 23, 2016
<u>/s/ Kenneth Myszkowski</u> Kenneth A. Myszkowski	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	November 23, 2016
<u>*</u> Douglass Given	Director, Chairman of the Board of Directors	November 23, 2016
<u>*</u> Mauro Ferrari	Director	November 23, 2016
<u>*</u> Edward W. Frykman	Director	November 23, 2016
<u>*</u> Michael S. Perry	Director	November 23, 2016

*By /s/ Kenneth Myszkowski
Kenneth Myszkowski
As: Attorney-in-Fact**

** Pursuant to authority granted by powers of attorney, copies of which have been previously filed.

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
3.1	Amended and Restated Certificate of Incorporation of Arrowhead Pharmaceuticals, Inc. (1)
3.2	Amended and Restated Bylaws of Arrowhead Pharmaceuticals, Inc. (1)
4.1	Form of Common Stock Certificate of Arrowhead Pharmaceuticals, Inc. (1)
5.1	Opinion of Gibson, Dunn & Crutcher LLP (2)
10.1	Common Stock Purchase Agreement, dated September 28, 2016, by and between Arrowhead Pharmaceuticals, Inc. and Amgen, Inc.**
23.1	Consent of Rose, Snyder & Jacobs, the registrant's independent registered public accounting firm (2)
23.2	Consent of Gibson, Dunn & Crutcher LLP (2)
24.1	Power of Attorney (2)

** Filed herewith.

(1) Filed as an exhibit to the registrant's Current Report on Form 8-K, filed on April 6, 2016, and incorporated by reference herein.

(2) Filed as an exhibit to the registrant's Registration Statement on Form S-3 (File No. 333-214311), filed on October 28, 2016 and being amended hereby.

COMMON STOCK PURCHASE AGREEMENT

THIS COMMON STOCK PURCHASE AGREEMENT (this “**Agreement**”) is entered into as of September 28, 2016, by and among Arrowhead Pharmaceuticals, Inc., a Delaware corporation (the “**Company**”), and Amgen Inc., a Delaware corporation (“**Purchaser**”).

WHEREAS, the Company desires to issue and sell to Purchaser up to \$26,500,000 worth of shares (the “**Shares**”) of common stock, par value \$0.001 per share, of the Company (the “**Common Stock**”), which Shares shall be authorized and issued in accordance with the terms of this Agreement (the “**Common Stock Financing**”);

WHEREAS, prior to or concurrently with the consummation of the transactions contemplated hereby, and as a condition to the willingness of, and material inducement to, Purchaser to enter into this Agreement, the Company and Purchaser shall enter into a First Collaboration and License Agreement of even date herewith (the “**First Collaboration Agreement**”) and a separate Second Collaboration and License Agreement (the “**Second Collaboration Agreement**”) (such agreements collectively referred to as the “**Collaboration Agreements**”); and

WHEREAS, subject to the terms and conditions set forth in this Agreement, Purchaser desires to purchase from the Company the Shares.

NOW, THEREFORE, in consideration of the mutual promises, representations, warranties, covenants and conditions set forth in this Agreement, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto hereby agree as follows:

1. PURCHASE AND SALE

1.1 Sale and Issuance of Shares. In consideration of the Collaboration Agreements and in express reliance upon the representations, warranties and covenants set forth herein, and subject to the terms and conditions set forth in this Agreement, the Company shall issue and sell to Purchaser, and Purchaser shall purchase from the Company, the Shares; *provided* that in no event shall the aggregate number of Shares subject to issuance pursuant to Section 1.2, Section 1.3, and Section 1.4 exceed 19.9% of the total outstanding shares of the Common Stock calculated as of the Initial Closing (as defined below).

1.2 Initial Closing. The initial purchase and sale of the Shares shall take place remotely via the exchange of documents and signatures at 10:00 a.m. on the Effective Date, as defined in the First Collaboration Agreement (the “**Effective Date**”), or at such other time as the Company and Purchaser shall mutually agree (which time, date and place are referred to in this Agreement as the “**Initial Closing**”). At the Initial Closing, the Company shall instruct Computershare Limited (the “**Transfer Agent**”) to register the issuance of the Initial Closing Shares (as defined below) via book entry, against delivery to the Company by Purchaser at the Initial Closing of \$9,000,000, payable in immediately available funds by wire transfer to an account or accounts designated by the Company. The “**Initial Closing Shares**” shall mean that number of shares of Common Stock equal to \$9,000,000 divided by the Bloomberg volume-weighted average price for a share of Common Stock on the NASDAQ Global Select Market for the 30 trading day period ending on the last day on which the NASDAQ Global Select Market is open (a “**Trading Day**”) prior to the Effective Date, as defined in the First Collaboration Agreement, rounded to the nearest whole share.

1.3 Second Tranche Closing. The purchase of the Second Tranche Shares (as defined below) shall take place at 10:00 a.m. on the Closing Date (as defined in the Second Collaboration Agreement), or at such other time as the Company and Purchaser shall mutually agree (which time, date and place are referred to in this Agreement as the “**Second Tranche Closing**”). At the Second Tranche Closing, the Company shall instruct the Transfer Agent to register the issuance of the Second Tranche Closing Shares via book entry, against delivery to the Company by Purchaser at the Second Tranche Closing of \$12,500,000, payable in immediately available funds by wire transfer to an account or accounts designated by the Company. The “**Second Tranche Closing Shares**” shall mean that number of shares of Common Stock equal to \$12,500,000 divided by the Bloomberg volume-weighted average price for a share of Common Stock on the NASDAQ Global Select Market for the 30 Trading Day period ending on the last Trading Day prior to the Effective Date, rounded to the nearest whole share.

1.4 Third Tranche Closing. Upon Purchaser’s exercise of the Option (as defined in the First Collaboration Agreement), Purchaser shall purchase, and the Company shall sell, the Third Tranche Shares (as defined below). Following the exercise of the Option, the purchase and sale of the Third Tranche Shares (the “**Third Tranche Closing**” and, together with the Initial Closing and Second Tranche Closing, each a “**Closing**”) shall occur within fifteen Trading Days of the delivery of such notice of exercise (the “**Option Exercise Notice**”). At the Third Tranche Closing, the Company shall instruct the Transfer Agent to register the Third Tranche Shares via book entry against delivery to the Company by Purchaser at or before the Third Tranche Closing of \$5,000,000, payable in immediately available funds by wire transfer to an account or accounts designated by the Company. The “**Third Tranche Shares**” shall mean that number of shares of Common Stock equal to \$5,000,000 divided by the Bloomberg volume-weighted average price for a share of Common Stock on the NASDAQ Global Select Market for the 30 Trading Day period ending ten Trading Days subsequent to the last Trading Day prior to the receipt of the Option Exercise Notice, rounded to the nearest whole share.

2. REPRESENTATIONS AND WARRANTIES OF THE COMPANY

As of the date hereof and as of the date of each Closing, the Company represents and warrants to Purchaser that, subject to exceptions and disclosures set forth in any corresponding part or subpart of the Company Disclosure Schedule (it being agreed that disclosure of any item in any part or subpart of the Company Disclosure Schedule shall be deemed disclosure with respect to any other part or subpart to which the relevance of such item is reasonably apparent) and except as set forth in the SEC Filings (as defined below (excluding, in each case, any disclosures set forth in any risk factor section or in any other section to the extent they are forward looking statements or cautionary, predictive or forward-looking in nature), the statements contained in this Section 2 are true, complete and correct (except that those statements which address matters only as of a particular date are true, correct and complete as of such date). The Company shall deliver an updated and current Company Disclosure Schedule reasonably prior to each Closing.

2.1 Organization and Qualification. The Company and each subsidiary of the Company is a corporation duly organized, validly existing and in good standing under the laws of its jurisdiction and has all requisite corporate power and authority to own, lease and operate its properties and assets and to carry on its business as now conducted and as it is described in the SEC Filings. The Company and each subsidiary of the Company is duly qualified to transact business and is in good standing in each jurisdiction in which the failure to so qualify would or would be reasonably expected to have, individually or in the aggregate, a material adverse effect on (i) the business, properties or financial condition of the Company or any of its subsidiaries, (ii) the Shares or (iii) the enforceability of this Agreement (a “**Material Adverse Effect**”); *provided* that none of the following shall be taken into account in determining whether there is a Material Adverse Effect: (a) any change in the market price or trading volume of the Company’s stock; (b) any change in the industries in which the Company or its subsidiaries

operates generally or the United States economy or in other countries in which the Company conducts material operations, or in the financial markets or political conditions generally; (c) any change or effect arising from or relating to any change in legal requirements or generally accepted accounting principles (“GAAP”) (or interpretations of any legal requirements or GAAP) unrelated to the transactions contemplated by this Agreement and of general applicability; or (d) any adverse change proximately caused by the consummation of the transactions contemplated hereby, or the public announcement of the execution of, this Agreement (provided any such public announcement is not in breach of this Agreement); *provided*, with respect to clauses (a), (b) and (c), that such changes do not, individually or in the aggregate, have a disproportionate adverse impact on the Company, taken as a whole, relative to any other natural person, corporation, business trust, association, company, partnership, joint venture, limited liability company and any other entity or government, agency or political subdivision (“**Person**”) in the industries or markets in which the Company operates.

2.2 Certificate of Incorporation and Bylaws. The certificate of incorporation, bylaws and documents of similar substance (the “**Governing Documents**”) of the Company and each of its subsidiaries that are on file with the United States Securities and Exchange Commission (the “**SEC**”) are current, complete and correct copies thereof as in effect on the date hereof. The Governing Documents of the Company and its subsidiaries are in full force and effect. The Company and each subsidiary of the Company are in compliance with the terms of their respective Governing Documents.

2.3 Capitalization.

(a) As of September 1, 2016 the authorized capital stock of the Company consists of 150,000,000 shares of capital stock, of which 145,000,000 are designated as Common Stock and 5,000,000 are designated as preferred stock, \$0.001 par value per share (“**Preferred Stock**”). As of September 1, 2016: (i) 68,481,379 shares of Common Stock were issued and outstanding; (ii) 6,694,556 shares of Common Stock were issuable (and such number was reserved for issuance) upon exercise of options to purchase Common Stock (the “**Options**”) outstanding as of such date; (iii) 1,370,000 shares of Common Stock are issuable (and such number was reserved for issuance) upon vesting of restricted stock units for the issuance of Common Stock (the “**RSUs**”) outstanding as of such date; (iv) 528,181 shares of Common Stock were issuable (and such number was reserved for issuance) upon exercise of warrants to purchase Common Stock (the “**Warrants**”) outstanding as of such date; and (iv) 15,652 shares of Series C Preferred Stock were issued and outstanding.

(b) As of September 1, 2016, except for (i) the Options, (ii) the RSUs (iii) the Warrants, (iv) the Preferred Stock, and (v) 5,000 shares issuable subject to certain other exchange rights, there were no options, warrants or other rights to acquire capital stock or other equity interests from the Company, or securities convertible into or exchangeable for such capital stock or other equity interests. As of September 1, 2016, other than (A) shares of capital stock reserved for issuance as provided in this Section 2.3 and (B) options to purchase Common Stock or other equity awards issued in accordance with the Company’s 2013 Incentive Plan, the Company has not issued any shares of its capital stock or other equity interests, or securities convertible into or exchangeable for such capital stock or other equity interests except as set forth in its filings under the Securities Act of 1933, as amended (“**Securities Act**”) and the Securities Exchange Act of 1934, as amended (“**Exchange Act**”). The Shares to be issued in connection with the Agreement, when issued as contemplated herein, will be duly authorized, validly issued, fully paid and non-assessable, will not be in violation of any preemptive rights and will be free and clear of all liens, charges, restrictions, claims, rights of first refusal and encumbrances except as set forth in this Agreement and the Company’s Governing Documents. The issuance and sale of the Shares will not obligate the Company to issue shares of Common Stock or other securities to any Person (other than Purchaser) and will not result in a right of any holder of Company securities to adjust the exercise, conversion, exchange or reset price under any of such securities.

2.4 Authorization; Enforceability.

(a) The Company has all requisite corporate power and authority to execute, deliver and perform, as applicable, this Agreement and to issue and sell the Shares in accordance with the terms hereof.

(b) All corporate action on the part of the Company and its officers and Board of Directors necessary for (i) the authorization, execution, delivery and performance of all obligations of the Company under this Agreement has been taken and (ii) the issuance and sale by the Company of the Shares hereunder has been taken. This Agreement constitutes a valid and legally binding obligation of the Company, enforceable in accordance with its terms, except (A) as limited by applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally or by equitable principles and (B) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies (the "**Equitable Exceptions**"). No action on the part of the Company's stockholders is necessary for the authorization, execution, delivery or performance of the Company's obligations hereunder.

2.5 SEC Filings; Financial Statements.

(a) The Company has timely filed with or furnished to the SEC all registration statements, prospectuses, forms, reports, definitive proxy statements, schedules and documents required to be filed by it under the Securities Act or the Exchange Act, as the case may be (collectively, the "**SEC Filings**"). Each SEC Filing, as amended or supplemented, if applicable, (i) as of its date, or, if amended, as of the date of the last such amendment, complied in all material respects with the applicable requirements of the Securities Act, the Exchange Act and the Sarbanes-Oxley Act of 2002, as amended (the "**Sarbanes-Oxley Act**"), as the case may be, and the rules and regulations of the SEC thereunder, applicable to such SEC Filing, and (ii) did not, at the time it was filed (or at the time it became effective in the case of registration statements), or, if amended, as of the date of the last such amendment, contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act. As of the Initial Closing, the Company meets the registrant requirements for eligibility to use Form S-3 set forth in General Instruction I.A to Form S-3.

(b) Each of the consolidated financial statements (including, in each case, any notes thereto) contained in the SEC Filings, as amended, supplemented or restated, if applicable, was prepared in accordance with GAAP applied (except as may be indicated in the notes thereto and, in the case of unaudited quarterly financial statements, as permitted by the Form 10-Q under the Exchange Act) on a consistent basis throughout the periods indicated (except as may be indicated in the notes thereto), and each presented fairly the consolidated financial position, results of operations and cash flows of the Company and the consolidated subsidiaries of the Company as of the respective dates thereof and for the respective periods indicated therein (subject, in the case of unaudited quarterly financial statements, to normal year-end adjustments). There is no transaction, arrangement or other relationship between the Company or any of its subsidiaries and an unconsolidated or other off balance sheet entity that is required to be disclosed by the Company in SEC Filings and is not so disclosed and would have or reasonably be expected to result in a Material Adverse Effect.

(c) The Company and its subsidiaries have implemented and maintain a system of internal control over financial reporting (as required by Rule 13a-15(a) under the Exchange Act) that is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements in accordance with GAAP for external purposes and

includes policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company, (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP and to maintain accountability of assets, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company, and (iii) provide reasonable assurance regarding the prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on its financial statements, and such system of internal control over financial reporting is reasonably effective.

(d) The Company has implemented and maintains disclosure controls and procedures (as defined in Rule 13a-15(d) of the Exchange Act) that are designed to ensure that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time frames specified by the SEC's rules and forms (and such disclosure controls and procedures are reasonably effective), and has disclosed, based on its most recent evaluation of its system of internal control over financial reporting, to the Company's independent registered accountant and the audit committee of the Board of Directors (A) any significant deficiencies and material weaknesses to the Company's knowledge in the design or operation of its internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act) and (B) to the Company's knowledge any fraud that involves management or other employees who have a significant role in the Company's internal control over financial reporting.

2.6 No Conflict; Required Filings and Consents.

(a) The execution and delivery of this Agreement by the Company does not, and the performance of this Agreement by the Company will not, (i) conflict with or violate any provision of the Governing Documents of the Company or its subsidiaries, (ii) assuming that all consents, approvals, authorizations and permits described in the Collaboration Agreements have been obtained, conflict with or violate any law applicable to the Company or any of its subsidiaries or by which any property or asset of the Company or any of its subsidiaries is bound or affected or (iii) conflict with, or constitute a default (or an event which, with notice or lapse of time or both, would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any Material Contract (as defined below).

(b) The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any federal, national, supranational, state, provincial, municipal, local or other government, governmental, regulatory or administrative authority, agency or commission or any court, tribunal, or judicial or arbitral body of competent jurisdiction ("**Governmental Authority**") or other Person in connection with the execution, delivery and performance by the Company of the issuance of the Shares, other than (i) (A) the filing of a registration statement with the SEC in accordance with the requirements of Section 6.1 below, (B) filings required by applicable Blue Sky Laws, (C) the filing of a Notice of Sale of Securities on Form D with the SEC under Regulation D of the Securities Act, (D) the filing of any requisite notices and/or application(s) to the NASDAQ Global Select Market for the issuance and sale of the Shares and the listing of the Shares thereon in the time and manner required thereby, (E) any filing required by the Collaboration Agreements, and (F) those that have been made or obtained prior to the date of this Agreement, or (ii) where failure to obtain such consents, approvals, authorizations or permits, or to make such filings or notifications, would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

2.7 Employees and Employee Matters. Except as would not reasonably be expected to have a Material Adverse Effect, the Company and its subsidiaries have complied with all federal, state and local laws relating to the hiring of employees, consultants and advisors and the employment of labor, including provisions thereof relating to wages, hours, equal opportunity, collective bargaining and the payment of social security and other taxes. Neither the Company nor any of its subsidiaries is delinquent in material payments to any of its employees for any wages, salaries, commissions, bonuses or other direct compensation for any services performed by them to date or amounts required to be reimbursed to such employees or upon any termination of the employment of any such employees.

2.8 Material Contracts. (i) Each Material Contract is valid and binding on the Company or a subsidiary of the Company, as the case may be, and, to the Company's knowledge, each other party thereto, and in full force and effect, (ii) each Material Contract is enforceable against the Company or any such subsidiary and, to the Company's knowledge, the other parties thereto in accordance with the terms thereof, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium and other similar laws of general applicability relating to or affecting creditor's rights generally and by the application of general principles of equity and (iii) neither the Company nor any of its subsidiaries has received written notice of any breach, violation or default under (or any condition which with the passage of time or the giving of notice would cause such a breach, violation of or default under) any Material Contract, except where such breach, violation or default would not reasonably be expected to have a Material Adverse Effect. Neither the Company nor any of its subsidiaries has been notified that any party to any Material Contract intends to cancel, terminate, not renew or exercise an option under any Material Contract, whether in connection with the transactions contemplated hereby or otherwise. "**Material Contract**" means all written and oral contracts, agreements, deeds, mortgages, leases, subleases, licenses, instruments, notes, commitments, commissions, undertakings, arrangements and understandings: (i) which by their terms involve, or would reasonably be expected to involve, aggregate payments by or to the Company or any of its subsidiaries during any twelve month period in excess of \$1,000,000, (ii) the breach of which by the Company or any of its subsidiaries would reasonably be expected to have a Material Adverse Effect, or (iii) which are required to be filed as exhibits by the Company with the SEC since September 30, 2015 pursuant to Items 601(b)(1), 601(b)(2), 601(b)(4), 601(b)(9) or 601(b)(10) of Regulation S-K promulgated by the SEC.

2.9 Litigation. There is no material action, suit or proceeding pending or, to the Company's knowledge, currently threatened against the Company or any of its subsidiaries or against any director, officer or employee of the Company or any of its subsidiaries. Neither the Company nor any of its subsidiaries is a party to, or subject to the provisions of, any order, writ, injunction, judgment or decree of any court or government agency or instrumentality. There is no material action, suit, proceeding or investigation by the Company or any of its subsidiaries currently pending or that the Company or any of its subsidiaries intends to initiate.

2.10 Taxes. (i) All federal, state and local tax returns, reports and declarations of the Company and its subsidiaries required by law to be filed have been duly filed, (ii) all taxes and other fees due thereon have been paid and (iii) the Company has set aside on its books provisions reasonably adequate for the payment of all material taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There is no tax lien, whether imposed by any federal, state, county or local taxing authority, outstanding against the assets, properties or business of the Company or any of its subsidiaries. There are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction, and the officers of the Company know of no basis for any such claim.

2.11 Listing and Maintenance Requirements. The Common Stock is registered pursuant to Section 12(b) or 12(g) of the Exchange Act, and the Company has taken no action designed to, or which to its knowledge is reasonably likely to have the effect of, terminating the registration of the Common

Stock under the Exchange Act nor has the Company received any notification that the SEC is contemplating terminating such registration. The Company is in compliance with the requirements of the NASDAQ Global Select Market for continued listing of the Common Stock thereon and has not received any notification that the NASDAQ Global Select Market is contemplating terminating such listing. The Company has no reason to believe that it will not upon issuance of the Shares continue to be in compliance with all such listing and maintenance requirements. The issuance of the Shares hereunder does not contravene the rules of the NASDAQ Global Select Market.

2.12 Offering Exemption. Based in part on the representations of Purchaser set forth in Section 3.2 below, the offer, sale and issuance of the Shares in conformity with the terms of this Agreement are exempt from the registration requirements of the Securities Act and are exempt from the qualification or registration requirements of applicable state securities laws. Neither the Company nor its Affiliates, nor any agent on its or their behalf, (i) has engaged in any form of general solicitation or general advertising (within the meaning of Regulation D under the Securities Act) in connection with the Common Stock Financing, (ii) has solicited or will solicit any offers to sell or has offered to sell or will offer to sell all or any part of the Shares to any Person or Persons so as to bring the sale of the Shares by the Company within the registration provisions of the Securities Act or any state securities laws or (iii) has issued any shares of Common Stock or shares of any series of Preferred Stock or other securities or instruments convertible into, exchangeable for or otherwise entitling the holder thereof to acquire shares of Common Stock which would be integrated with the sale of the Shares to Purchaser for purposes of the Securities Act or of any applicable shareholder approval provisions, including, without limitation, under the rules and regulations of any exchange or automated quotation system on which any of the securities of the Company are listed or designated, nor will the Company or any of its subsidiaries or Affiliates take any action or steps that would require registration of any of the Shares under the Securities Act.

2.13 Investment Company Act. The Company is not, and is not an Affiliate (as defined below) of, and after giving effect to the Common Stock Financing, will not be and will not be an Affiliate of, an “investment company” or an entity “controlled” by an “investment company,” as such terms are defined in the Investment Company Act of 1940. For purposes of this Agreement, “Affiliate” shall mean any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

2.14 Material Changes; Undisclosed Events, Liabilities or Developments. Since the date of the latest financial statements included within the SEC Filings: (i) there has been no event, occurrence or development that has had or that could reasonably be expected to have a Material Adverse Effect, (ii) the Company has not incurred any material liabilities (contingent or otherwise) other than expenses incurred in the ordinary course of business consistent with past practice, (iii) the Company has not altered its method of accounting, (iv) the Company has not declared or made any dividend or distribution of cash or other property to the holders of its Common Stock or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock and (v) the Company has not issued any equity securities to any officer, director or Affiliate, except pursuant to existing Company equity compensation plans or upon the exercise of options or warrants previously reported on a Statement of Beneficial Ownership filed under Section 16 of the Exchange Act. Except for the issuance of the Shares contemplated by this Agreement, no event, liability, fact, circumstance, occurrence or development has occurred or exists or is reasonably expected to occur or exist with respect to the Company and its subsidiaries or their business, properties, operations, assets or financial condition, that would be required to be disclosed by the Company under applicable securities laws if the Company were publicly offering securities pursuant to an effective registration statement under the Securities Act at the time this representation is made or deemed made.

2.15 Labor Relations. No material labor dispute exists or, to the knowledge of the Company, is threatened with respect to any of the employees of the Company or any of its subsidiaries, which could reasonably be expected to result in a Material Adverse Effect. None of the Company's or its subsidiaries' employees is a member of a union that relates to such employee's relationship with the Company or any such subsidiary, neither the Company nor any of its subsidiaries is a party to any collective bargaining agreement, and the Company believes that its and its subsidiaries' relationships with its or their employees are good. The Company and its subsidiaries are in compliance with all U.S. federal, state, local and foreign laws and regulations relating to employment and employment practices, terms and conditions of employment and wages and hours, except where the failure to be in compliance could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

2.16 Environmental Matters. The Company and its subsidiaries are in compliance with and have not received notice of any actual or potential liability under or relating to, or actual or potential violation of, applicable federal, state and local laws, rules and regulations relating to the use, treatment, storage and disposal of hazardous or toxic substances or waste and protection of health and safety or the environment which are applicable to its business (the "**Environmental Laws**"). The Company has not received notice of any actual or potential liability under or relating to, or actual or potential violation of, any Environmental Laws, including for the investigation or remediation of any release or threat of release of hazardous materials, and has no knowledge of any event or condition that would reasonably be expected to result in any such notice. The Company is not aware of any facts or issues regarding its compliance with Environmental Laws, or liabilities or other obligations under Environmental Laws, that, individually or in the aggregate, would reasonably be expected to have a Material Adverse Effect, and the Company does not anticipate material capital expenditures relating to any Environmental Laws.

2.17 Title to Assets; Intellectual Property Matters. The Company or any of its subsidiaries, as applicable, has good and marketable title in all personal property owned by the Company or any such subsidiary that is material to the business of the Company and its subsidiaries, in each case free and clear of all liens, except for liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company or any of its subsidiaries and liens for the payment of federal, state or other taxes, the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company or any of its subsidiaries are held by it under valid, subsisting and enforceable leases with which the Company or any such subsidiary are in compliance. The Company owns, possesses, licenses or has other rights to use, on reasonable terms, all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, technology, know-how and other intellectual property (collectively, the "**Intellectual Property**") necessary for the conduct of the Company's business as now conducted or as proposed in the SEC Filings to be conducted (the "**Company Intellectual Property**"). To the knowledge of the Company, there are no rights of third parties to any Company Intellectual Property, other than as licensed by the Company. To the knowledge of the Company, there is no infringement by third parties of any Company Intellectual Property. There is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the Company's rights in or to any Company Intellectual Property. There is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others challenging the validity or scope of any Company Intellectual Property. There is no pending or, to the Company's knowledge, threatened action, suit, proceeding or claim by others that the Company infringes or otherwise violates any patent, trademark, copyright, trade secret or other proprietary rights of others. The Company is not aware of any facts required to be disclosed to the U.S. Patent and Trademark Office ("**USPTO**") that have not been disclosed to the USPTO and that would preclude the grant of a patent in connection with any patent application of the Company Intellectual Property or could form the basis of a finding of invalidity with respect to any issued patents of the Company Intellectual Property.

2.18 Insurance. The Company and its subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are prudent and customary in the business in which the Company and its subsidiaries are engaged, including, but not limited to, directors' and officers' insurance. The Company does not have any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business without a significant increase in cost.

2.19 Registration Rights. Except as provided for in this Agreement, no Person has any right to cause the Company to effect the registration under the Securities Act of any securities of the Company.

2.20 Application of Takeover Protections. The Company and the Board of Directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company's certificate of incorporation or the laws of its state of incorporation that is or could become applicable to Purchaser as a result of Purchaser and the Company fulfilling their obligations or exercising their rights under this Agreement, including without limitation as a result of the Company's issuance of the Shares and Purchaser's ownership of the Shares.

2.21 Foreign Corrupt Practices. Since October 1, 2013, neither the Company nor any of its subsidiaries, or to the knowledge of the Company or any of its subsidiaries, any director, officer, employee, agent or other person acting on behalf of the Company or any of its subsidiaries, has: (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution which is in violation of law or (iv) violated in any material respect any provision of the Foreign Corrupt Practices Act of 1977, as amended.

2.22 Accountants. The Company's independent registered public accounting firm is Rose, Snyder & Jacobs LLP. Such accounting firm: (i) is a registered public accounting firm as required by the Exchange Act; (ii) since at least 2011 has expressed its opinion with respect to the financial statements included in the Company's Annual Reports; and (iii) to the knowledge and belief of the Company shall express its opinion with respect to the financial statements to be included in the Company's Annual Reports. There are no disagreements of any kind presently existing or reasonably anticipated by the Company to arise between the Company and such accounting firm.

2.23 Office of Foreign Assets Control. Neither the Company nor any of its subsidiaries or, to the Company's knowledge, any director, officer, agent, employee or Person acting on behalf of the Company or any of its subsidiaries, is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department.

2.24 Money Laundering. The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the "**Money Laundering Laws**"), and no action, suit or proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

2.25 Compliance with Laws.

(a) Except as would not result in a Material Adverse Effect: (i) the Company is and has been in compliance with statutes, laws, ordinances, rules and regulations applicable to the Company for the ownership, testing, development, manufacture, packaging, processing, use, labeling, storage, or disposal of any product manufactured by or on behalf of the Company or out-licensed by the Company (a “**Company Product**”), including without limitation, the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 301, et seq., the Public Health Service Act, 42 U.S.C. § 262, similar laws of other Governmental Entities and the regulations promulgated pursuant to such laws (collectively, “**Applicable Laws**”); (ii) the Company possesses all licenses, certificates, approvals, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws and/or for the ownership of its properties or the conduct of its business as it relates to a Company Product and as described in the SEC Filings (collectively, “**Authorizations**”) and such Authorizations are valid and in full force and effect and the Company is not in violation of any term of any such Authorizations; (iii) the Company has not received any written notice of adverse finding, warning letter or other written correspondence or notice from the U.S. Food and Drug Administration (the “**FDA**”) or any other Governmental Authority alleging or asserting noncompliance with any Applicable Laws or Authorizations relating to a Company Product; (iv) the Company has not received written notice of any ongoing claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any Governmental Authority or third party alleging that any Company Product, operation or activity related to a Company Product is in violation of any Applicable Laws or Authorizations or has any knowledge that any such Governmental Authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding, nor, to the Company’s knowledge, has there been any noncompliance with or violation of any Applicable Laws by the Company that would reasonably be expected to require the issuance of any such written notice or result in an investigation, corrective action, or enforcement action by the FDA or similar Governmental Authority with respect to a Company Product; (v) the Company has not received written notice that any Governmental Authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations or has any knowledge that any such Governmental Authority has threatened or is considering such action with respect to a Company Product; and (vi) the Company has filed, obtained, maintained or submitted all reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete, correct and not misleading on the date filed (or were corrected or supplemented by a subsequent submission)

(b) To the Company’s knowledge, neither the Company nor any of its directors, officers, employees or agents, has made, or caused the making of, any false statements on, or material omissions from, any other records or documentation prepared or maintained to comply with the requirements of the FDA or any other Governmental Authority.

(c) The clinical studies and tests conducted by the Company or on behalf of the Company, have been and, if still pending, are being conducted in all material respects pursuant to all Applicable Laws and Authorizations; the descriptions of the results of such clinical studies and tests contained in the SEC Filings are accurate and complete in all material respects and fairly present the data derived from such clinical studies and tests; the Company is not aware of any clinical studies or tests, the results of which the Company believes reasonably call into question the research, nonclinical or clinical study or test results described or referred to in the SEC Filings when viewed in the context in which such results are described; and the Company has not received any written notices or correspondence from any Governmental Authority requiring the termination, suspension or material modification of any clinical study or test conducted by or on behalf of the Company.

2.26 Brokers. There is no investment banker, broker, finder, financial advisor, placement agent or other Person that has been retained by or is authorized to act on behalf of the Company or any of its subsidiaries that might be entitled to any fee or commission in connection with the transactions contemplated by this Agreement.

2.27 Suppliers and Customers. Neither the Company nor any of its subsidiaries has any knowledge of any termination, cancellation or threatened termination or cancellation or limitation of, or any material dissatisfaction with, the business relationship between the Company or any such subsidiary and any material supplier, customer, vendor, customer or client.

2.28 Acknowledgement. The Company acknowledges and agrees that Purchaser is acting solely in the capacity of an arm's length purchaser with respect to this Agreement and the transactions contemplated hereby. The Company further acknowledges that Purchaser is not acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to this Agreement and the transactions contemplated hereby and any advice given by Purchaser or any of their respective representatives or agents in connection with this Agreement and the transactions contemplated hereby is merely incidental to Purchaser's purchase of the Shares. The Company further represents to Purchaser that the Company's decision to enter into this Agreement has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

3. REPRESENTATIONS AND WARRANTIES OF PURCHASER

As a material inducement to the Company to enter into and perform its obligations under this Agreement, Purchaser represents and warrants to the Company as follows:

3.1 Authorization; Enforceability. Purchaser has all requisite power and authority to execute, deliver and perform this Agreement. All action on the part of Purchaser necessary for the authorization, execution, delivery and performance of all obligations of Purchaser under this Agreement has been taken. This Agreement constitutes the valid and legally binding obligations of Purchaser, enforceable in accordance with their terms, except as limited by the Equitable Exceptions.

3.2 Investor Representations.

(a) The Shares acquired by Purchaser hereunder will be acquired by Purchaser for its own account for investment purposes and not with a view to distribution in violation of the Securities Act. Purchaser does not presently have any contract, undertaking or agreement with any Person to sell, transfer or grant participation rights to such Person or to any other Person with respect to any of the Shares acquired by Purchaser hereunder.

(b) Purchaser is an "accredited investor" within the meaning of Rule 501(a) promulgated under the Securities Act.

(c) Purchaser understands that the Shares are characterized as "restricted securities" under the federal securities laws inasmuch as they are being acquired from the Company in a transaction not involving a public offering and that under such laws and applicable regulations such securities may be resold without registration under the Securities Act only in certain limited circumstances. Purchaser acknowledges and agrees that the Shares must be held indefinitely unless they are subsequently registered under the Securities Act or an exemption from such registration is available or the Company receives an opinion of counsel reasonably satisfactory to the Company that such registration is not required. Purchaser has been advised or is aware of the provisions of Rule 144 promulgated under the Securities Act as in effect from time to time ("**Rule 144**"), which permit limited resale of shares purchased in a private placement subject to the satisfaction of certain conditions.

(d) Purchaser acknowledges and agrees that it can bear the economic risk of its investment in the Shares and has such knowledge and experience in financial or business matters that it is capable of evaluating the merits and risks of the investment in the Shares.

(e) Purchaser has not agreed to incur, any liability for brokerage or finders' fees, agents' commissions or other similar charges in connection with this Agreement or any of the transactions contemplated hereby.

(f) Purchaser is not relying and has not relied on any representations or warranties whatsoever regarding the subject matter of this Agreement, express or implied, except for the representations and warranties in Section 2, including the Company Disclosure Schedule. Such representations and warranties by the Company constitute the sole and exclusive representations and warranties of the Company in connection with the transactions contemplated by this Agreement and Purchaser understands, acknowledges and agrees that all other representations and warranties of any kind or nature whether express, implied or statutory are specifically disclaimed by the Company.

4. CONDITIONS TO PURCHASER'S OBLIGATIONS AT CLOSING

The obligations of Purchaser under this Agreement to purchase and pay for the Shares being purchased by Purchaser at each Closing are subject to the satisfaction or waiver, at or prior to the applicable Closing, of the following conditions:

4.1 Representations and Warranties. The representations and warranties of the Company contained in Section 2 of this Agreement shall be true, correct and complete on and as of each Closing (except that those representations and warranties which address matters only as of a particular date need only be measured as of the specific date) except that any inaccuracies in such representations and warranties will be disregarded if they collectively do not constitute and would not reasonably be expected to have a Material Adverse Effect on the Company (it being understood that for purposes of determining the accuracy of any representation or warranties all Material Adverse Effect and other materiality qualifications contained in such representations and warranties will be disregarded).

4.2 Performance. The Company shall have performed and complied in all material respects with all other conditions, covenants and agreements contained in this Agreement required to be performed or complied with by it on or before the applicable Closing, and no Material Adverse Effect shall have occurred.

4.3 Legal Investment. On the date of the applicable Closing, the sale and issuance of the Shares shall be legally permitted by all laws and regulations to which Purchaser and the Company are subject.

4.4 No Suspension. Trading in the Common Stock shall not have been suspended by the SEC or the NASDAQ Global Select Market.

4.5 Qualifications. All authorizations, approvals or permits, if any, of any Governmental Authority that are required in connection with the lawful issuance and sale of the Shares pursuant to this Agreement shall have been duly obtained and shall be effective on and as of the applicable Closing.

4.6 No Injunction. No statute, rule, regulation, executive order, decree, ruling or injunction shall have been enacted, entered, promulgated or endorsed by any Governmental Authority of competent jurisdiction which prohibits the consummation of any of the transactions contemplated by this Agreement.

4.7 Collaboration Agreement. The Company shall have executed the Collaboration Agreements and the Effective Date of the First Collaboration Agreement shall have occurred on or before the Initial Closing, and the Closing Date of the Second Collaboration Agreement shall have occurred on or before the Second Tranche Closing.

5. CONDITIONS TO THE COMPANY'S OBLIGATIONS AT CLOSING

The obligations of the Company under this Agreement to sell and issue to Purchaser the Shares to be purchased by Purchaser at each Closing are subject to the satisfaction or waiver, at or prior to the applicable Closing, of the following conditions:

5.1 Representations and Warranties. The representations and warranties of Purchaser contained in Section 3 shall be true, correct and complete in all respects on and as of the applicable Closing with the same force and effect as if they had been made at such time (except that those representations and warranties which address matters only as of a particular date need only be true, correct and complete in all material respects as of such date), except as would not, individually or in the aggregate, reasonably be expected to prevent or materially delay the consummation of the transactions contemplated hereby.

5.2 Performance. Purchaser shall have performed and complied with all other conditions, covenants and agreements contained in this Agreement required to be performed or complied with by Purchaser on or before the applicable Closing.

5.3 Collaboration Agreements. Purchaser shall have executed the Collaboration Agreements and the Effective Date of the First Collaboration Agreement shall have occurred on or before the Initial Closing, and the Closing Date of the Second Collaboration Agreement shall have occurred on or before the Second Tranche Closing.

6. COVENANTS

6.1 Registration Rights. The Company covenants and agrees as follows:

(a) As soon as practicable, and in any event within 30 days following the Initial Closing, the Company shall register the Shares purchased at the Initial Closing on a Registration Statement on Form S-3 (or such other form appropriate for such purpose) under the Securities Act. For the Second Tranche Closing, if at any time when it is eligible to use a Form S-3 registration statement, the Company shall as soon as practicable, and in any event within 30 days after the date of purchase by Purchaser, either register on an active Form S-3 or file a new Form S-3 registration statement (or such other form appropriate for such purpose) under the Securities Act covering all Registrable Shares (as defined below) then purchased by Purchaser (and, at the discretion of the Company, other registrable shares held by other stockholders), subject to the limitations of Sections 6.1(b). For the Third Tranche Closing, if at any time when it is eligible to use a Form S-3 registration statement, the Company shall as soon as practicable, and in any event within 30 days after the date of purchase by Purchaser, either register on an active Form S-3 or file a new Form S-3 registration statement (or such other form appropriate for such purpose) under the Securities Act covering all Registrable Shares (as defined below) then purchased by Purchaser (and, at the discretion of the Company, other registrable shares held by other

stockholders), subject to the limitations of Sections 6.1(b). With respect to each Closing, the Company shall use its commercially reasonable efforts to have any such registration statement declared effective by the SEC as soon as practicable, but in no event later than the date which shall be either: (i) in the event that the SEC does not review such registration statement, 90 days after such Closing, or (ii) in the event that the SEC reviews such registration statement, 120 days after such Closing (but in any event, no later than three Business Days following the date on which the SEC indicates that it has no further comments on such registration statement). The Company shall maintain the effectiveness of any registration statements with respect to the Registrable Shares in accordance with the terms hereof for a period ending on the date on which all Registrable Shares covered by such registration statement have been sold pursuant to such registration statement or have otherwise ceased to be Registrable Shares.

(b) Notwithstanding the foregoing obligations, if the Company furnishes to Purchaser a certificate signed by the Company's Chief Executive Officer stating that in the good faith judgment of the Board of Directors it would be materially detrimental to the Company and its stockholders for a registration statement with respect to Registrable Shares to either become effective or remain effective for as long as such registration statement otherwise would be required to remain effective, because such action would (i) materially interfere with a material acquisition, corporate reorganization or other similar transaction involving the Company; (ii) require premature disclosure of material information that the Company has a *bona fide* business purpose for preserving as confidential; or (iii) render the Company unable to comply with requirements under the Securities Act or Exchange Act, then the Company shall have the right to defer taking action with respect to such filing, and any time periods with respect to filing or effectiveness thereof shall be tolled correspondingly, for a period not to exceed 60 days after the applicable Closing date for the purchase of such Registrable Shares; *provided*, that the Company may not invoke this right more than once in any 12 month period.

(c) All expenses incurred in connection with registrations, filings or qualifications pursuant to this Section 6.1, including all registration, filing and qualification fees; printers' and accounting fees; fees and disbursements of counsel for the Company; and the reasonable fees and disbursements, shall be borne and paid by the Company.

(d) For the purposes of this Section 6.1,

(i) "**Loss**" and "**Losses**" means any loss, damage, claim or liability (joint or several) to which a party hereto may become subject under the Securities Act, the Exchange Act, or other federal or state law, insofar as such loss, damage, claim or liability (or any action in respect thereof) arises out of or is based upon: (i) any untrue statement or alleged untrue statement of a material fact contained in any registration statement of the Company, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto; (ii) an omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein not misleading; or (iii) any violation or alleged violation by the indemnifying party (or any of its agents or Affiliates) of the Securities Act, the Exchange Act, any state securities law, or any rule or regulation promulgated under the Securities Act, the Exchange Act, or any state securities law.

(ii) "**Registrable Shares**" means the Shares held by Purchaser including, without limitation, any shares of Common Stock paid, issued or distributed in respect of any such Shares by way of stock dividend, stock split or distribution, or in connection with a combination of shares, recapitalization, reorganization, merger or consolidation, or otherwise, but excluding shares of Common Stock acquired in the open market before or after the date hereof, *provided, however*, that the Shares will cease to be "Registrable Shares" when (A) the Shares have been sold pursuant to an effective registration statement or (B) the Shares proposed to be sold by Purchaser, in the opinion of counsel satisfactory to the Company, may be distributed to the public without any limitation pursuant to Rule 144 (or any successor provision then in effect).

(e) With a view to making available to Purchaser the benefits of Rule 144, for a period of one year following the date of the latest Closing pursuant to this Agreement, the Company covenants that it will (i) use its commercially reasonable efforts to file in a timely manner all reports and other documents required, if any, to be filed by it under the Securities Act and the Exchange Act and the rules and regulations adopted thereunder and (ii) make available information necessary to comply with Rule 144 with respect to resales of the Registrable Shares under the Securities Act, at all times, all to the extent required from time to time to enable Purchaser to sell Registrable Shares without registration under the Securities Act within the limitation of the exemptions provided by (A) Rule 144 (if available with respect to resales of the Registrable Shares), as such rule may be amended from time to time or (B) any other rules or regulations now existing or hereafter adopted by the SEC.

(f) To the extent permitted by law, the Company will indemnify and hold harmless Purchaser, and the partners, members, officers, directors, and stockholders of Purchaser; legal counsel and accountants for Purchaser; any underwriter (as defined in the Securities Act) for Purchaser; and each Person, if any, who controls Purchaser or underwriter within the meaning of the Securities Act or the Exchange Act, against any Losses, and the Company will pay to Purchaser, underwriter, controlling Person, or other aforementioned Person any legal or other expenses reasonably incurred thereby in connection with investigating or defending any claim or proceeding from which Losses may result, as such expenses are incurred; *provided, however*, that the indemnity agreement contained in this Section 6.1(f) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of the Company, which consent shall not be unreasonably withheld, nor shall the Company be liable for any Losses to the extent that they arise out of or are based upon actions or omissions made in reliance upon and in conformity with written information furnished by or on behalf of any Purchaser, underwriter, controlling Person, or other aforementioned Person expressly for use in connection with such registration.

(g) To the extent permitted by law, Purchaser agrees to indemnify and hold harmless the Company, each of the directors of the Company, each of the officers of the Company who shall have signed a registration statement, and each other Person, if any, who controls the Company within the meaning of the Securities Act or the Exchange Act, against any Losses to which they or any of them may become subject under the Securities Act, the Exchange Act or otherwise, insofar as such Losses (or actions in respect thereof) arise out of or are based upon any untrue statement or alleged untrue statement of a material fact contained in a registration statement or any document incorporated by reference in such document, or arise out of or are based upon the omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, in each case to the extent, but only to the extent, that any such Loss arises out of or is based upon any such untrue statement or alleged untrue statement or omission or alleged omission made therein in reliance upon and in strict conformity with written information furnished to the Company by or on behalf of Purchaser for use therein; *provided, however*, that the indemnity agreement contained in this Section 6.1(g) shall not apply to amounts paid in settlement of any such claim or proceeding if such settlement is effected without the consent of Purchaser, which consent shall not be unreasonably withheld. The maximum aggregate amount of indemnifiable Losses that may be recovered from Purchaser under the provisions of this Section 6.1(g) shall be the aggregate value of the consideration received for the Shares.

(h) Promptly after receipt by an indemnified party under this Section 6.1 of notice of the commencement of any action (including any governmental action) for which a party may be entitled to indemnification hereunder, such indemnified party will, if a claim in respect thereof is to be made

against any indemnifying party under this Section 6.1, give the indemnifying party notice of the commencement thereof. The indemnifying party shall have the right to participate in such action and, to the extent the indemnifying party so desires, participate jointly with any other indemnifying party to which notice has been given, and to assume the defense thereof with counsel mutually satisfactory to the parties; *provided, however*, that an indemnified party (together with all other indemnified parties that may be represented without conflict by one counsel) shall have the right to retain one separate counsel, with the fees and expenses to be paid by the indemnifying party, if representation of such indemnified party by the counsel retained by the indemnifying party would be inappropriate due to actual or potential differing interests between such indemnified party and any other party represented by such counsel in such action. The failure to give notice to the indemnifying party within a reasonable time of the commencement of any such action shall relieve such indemnifying party of any liability to the indemnified party under this Section 6.1, to the extent that such failure materially prejudices the indemnifying party's ability to defend such action. The failure to give notice to the indemnifying party will not relieve it of any liability that it may have to any indemnified party otherwise than under this Section 6.1.

(i) To provide for just and equitable contribution to joint liability under the Securities Act in any case in which either: (i) any party otherwise entitled to indemnification hereunder makes a claim for indemnification pursuant to this Section 6.1 but it is judicially determined (by the entry of a final judgment or decree by a court of competent jurisdiction and the expiration of time to appeal or the denial of the last right of appeal) that such indemnification may not be enforced in such case, notwithstanding the fact that this Section 6.1 provides for indemnification in such case, or (ii) contribution under the Securities Act may be required on the part of any party hereto for which indemnification is provided under this Section 6.1, then, and in each such case, such parties will contribute to the aggregate Losses, claims, damages, liabilities, or expenses to which they may be subject (after contribution from others) in such proportion as is appropriate to reflect the relative fault of each of the indemnifying party and the indemnified party in connection with the statements, omissions, or other actions that resulted in such loss, claim, damage, liability, or expense, as well as to reflect any other relevant equitable considerations. The relative fault of the indemnifying party and of the indemnified party shall be determined by reference to, among other things, whether the untrue or allegedly untrue statement of a material fact, or the omission or alleged omission of a material fact, relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission; *provided, however*, that, in any such case (x) Purchaser will not be required to contribute any amount in excess of the proceeds from the Registrable Shares offered and sold by Purchaser pursuant to such registration statement, and (y) no Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) will be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation.

(j) The obligations of the Company and Purchaser under this Section 6.1 shall survive completion of any offering of Registrable Shares in a registration statement under the Securities Act and the termination of this Agreement. The indemnity and contribution agreements contained in this Section 6.1 are in addition to any liability that the indemnifying parties may have to the indemnified parties and are not in diminution or limitation of other remedies or causes of action that the parties may have under this Agreement.

6.2 Notifications.

(a) Prior to each Closing, the Company will promptly advise Purchaser in writing of any notice or other communication from any third Person alleging that the consent of a third Person is required in connection with the transactions contemplated by this Agreement.

(b) Prior to each Closing, each party shall promptly notify the other of any action, suit or proceeding that is instituted or specifically threatened in writing against such party to restrain, prohibit or otherwise challenge the legality of any transaction contemplated by this Agreement.

6.3 Reasonable Best Efforts. Each party will use its reasonable best efforts to satisfy in a timely fashion each of the conditions to be satisfied by it under Section 4 and Section 5 of this Agreement.

6.4 Securities Laws Disclosure; Publicity. The Company shall, by 9:00 a.m. (New York City time) on or before the fourth Trading Day following the date hereof, issue a press release disclosing the material terms of the transactions contemplated hereby, and shall, within four Trading Days following the date hereof, file a Current Report on Form 8-K disclosing the material terms of the transactions contemplated hereby and including a copy of the Company's press release described in this paragraph as an exhibit thereto. The Company and Purchaser shall consult with each other regarding the substance of any public disclosure by either party regarding this Agreement or the Collaboration Agreements (including the filing of any such agreement as an exhibit to a periodic filing with the SEC) and regarding the issuance of any other press releases with respect to the transactions contemplated hereby, and neither the Company nor Purchaser shall issue any such press release nor otherwise make any such public statement without the prior consent of the Company, with respect to any press release of Purchaser, or without the prior consent of Purchaser, with respect to any press release of the Company, which consent shall not unreasonably be withheld or delayed, except if such disclosure is required by law, in which case the disclosing party shall promptly provide the other party with prior notice of such public statement or communication.

6.5 Indemnification of Purchaser. Subject to the provisions of this Section 6.5 and except as provided in Section 6.1(f), the Company will indemnify and hold Purchaser and its directors, officers, stockholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling persons (each, a "**Purchaser Party**") harmless from any and all Losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts paid in settlements, court costs and reasonable attorneys' fees and costs of investigation that any such Purchaser Party may suffer or incur due to a claim by a third party as a result of or relating to any action instituted against the Purchaser Parties in any capacity, or any of them or their respective Affiliates, by any stockholder of the Company who is not an Affiliate of such Purchaser Parties, with respect to any of the transactions contemplated by this Agreement (unless such action is based upon a breach of such Purchaser Party's representations, warranties or covenants under this Agreement or any agreements or understandings such Purchaser Parties may have with any such stockholder or any violations by such Purchaser Parties of state or federal securities laws or any conduct by such Purchaser Parties which constitutes fraud, gross negligence, willful misconduct or malfeasance). If any action shall be brought against any Purchaser Party in respect of which indemnity may be sought pursuant to this Agreement, such Purchaser Party shall promptly notify the Company in writing, and the Company shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to the Purchaser Party. Any Purchaser Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Purchaser Party except to the extent that (i) the employment thereof has been specifically authorized by the Company in writing, (ii) the Company has failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable

opinion of counsel, a material conflict on any material issue between the position of the Company and the position of such Purchaser Party, in which case the Company shall be responsible for the reasonable fees and expenses of no more than one such separate counsel for all Purchaser Parties entitled to indemnification hereunder. The Company will not be liable to any Purchaser Party under this Agreement (y) for any settlement by a Purchaser Party effected without the Company's prior written consent, which shall not be unreasonably withheld or delayed; or (z) to the extent, but only to the extent that a loss, claim, damage or liability is attributable to any Purchaser Party's breach of any of the representations, warranties, covenants or agreements made by such Purchaser Party in this Agreement. The indemnity agreements contained herein shall be in addition to any cause of action or similar right of any Purchaser Party against the Company and any liabilities that the Company may be subject to pursuant to law. The Company will have the exclusive right to settle any claim or proceeding, provided that the Company will not settle any such claim, action or proceeding without the prior written consent of the Purchaser Party, which will not be unreasonably withheld or delayed; provided, however, that such consent shall not be required if the settlement includes a full and unconditional release satisfactory to the Purchaser Party from all liability arising or that may arise out of such claim or proceeding and does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any Purchaser Party.

6.6 Listing of Common Stock. The Company hereby agrees to use commercially reasonable efforts to maintain the listing or quotation of the Common Stock on the NASDAQ Global Select Market.

6.7 Form D; Blue Sky Filings. The Company agrees to timely file a Form D with respect to the Shares as required under Regulation D and to provide a copy thereof, promptly upon request of Purchaser. The Company shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for, or to qualify the Shares for, sale to Purchaser at each Closing under applicable securities or "Blue Sky" laws of the states of the United States, and shall provide evidence of such actions promptly upon request of Purchaser.

6.8 Book Entry Statement. The Company hereby agrees to deliver to Purchaser a book entry statement from the Transfer Agent showing the Initial Closing Shares or the Second Tranche Shares, as applicable, registered in the name of Purchaser within one business day of the applicable Closing.

7. TERMINATION

7.1 Termination. This Agreement may be terminated at any time:

- (a) by the mutual written consent of Purchaser and the Company; or
- (b) by the Company or Purchaser upon termination of the Collaboration Agreements in accordance with their respective terms.

7.2 Effect of Termination. In the event of any termination of this Agreement as provided in [Section 7.1](#), this Agreement (other than [Section 6.1\(j\)](#)), which shall remain in full force and effect) shall forthwith become wholly void and of no further force and effect; *provided* that nothing herein shall relieve any party from liability for willful breach of this Agreement.

8. GENERAL

8.1 Successors and Assigns. Except as otherwise provided herein, the terms and conditions of this Agreement shall inure to the benefit of and be binding upon the respective successors and permitted assigns of the parties (including any permitted transferees of any Shares). Purchaser and the Company may not assign their respective rights or obligations under this Agreement, in whole or in part, except with the consent of the other party; *provided, however*, the rights and obligations of Purchaser may be assigned, without the prior written consent of the Company, (i) to one or more of Purchaser's Affiliates or (ii) to Purchaser's assignee of a Collaboration Agreement. Any attempted assignment made in contravention of this Agreement shall be null and void and of no force or effect.

8.2 Entire Agreement. This Agreement and the Collaboration Agreements and the documents, schedules and exhibits referred to herein or therein constitute the entire agreement between the parties and supersede all prior communications, representations, understandings and agreements of the parties with respect to the subject matter hereof and thereof. No party shall be liable or bound to any other party in any manner by any warranties, representations or covenants except as specifically set forth herein or therein. All schedules and exhibits hereto are hereby incorporated herein by reference. Nothing in this Agreement, express or implied, is intended to confer upon any third party any rights, remedies, obligations or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

8.3 General Interpretation. The terms of this Agreement have been negotiated by the parties hereto and the language used in this Agreement shall be deemed to be the language chosen by the parties hereto to express their mutual intent. This Agreement shall be construed without regard to any presumption or rule requiring construction against the party causing such instrument or any portion thereof to be drafted, or in favor of the party receiving a particular benefit under this Agreement. No rule of strict construction will be applied against any Person.

8.4 Injunctive Relief. Purchaser and the Company acknowledge and agree that, in view of the uniqueness of the Shares, damages at law would be insufficient for any breach by Purchaser or the Company of any of their respective covenants in this Agreement. Accordingly, each party agrees that in the event of any breach or threatened breach by the other party of any provisions of this Agreement, the non-breaching party be entitled to seek equitable relief in the form of an order to specifically perform or an injunction to prevent irreparable injury.

8.5 Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to the principles of conflicts of law thereof.

8.6 Jurisdiction. The parties hereby irrevocably and unconditionally submit to the jurisdiction of the state and federal courts located in the City of New York, New York for the purpose of any suit, action or other proceeding arising out of or based upon this Agreement.

8.7 Counterparts. This Agreement may be executed in counterparts and by the parties hereto in separate counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement, and may be delivered to the other parties hereto by facsimile.

8.8 Section Headings and References. The section headings contained herein are for the convenience of the parties and in no way alter, modify, amend, limit or restrict the contractual obligations of the parties. When a reference is made in this Agreement to a Section or Exhibit, such reference is to a Section or Exhibit of or to this Agreement unless otherwise indicated. The words "hereof," "herein," "hereto" and "hereunder" and words of similar import, when used in this Agreement, shall refer to this Agreement as a whole and not to any particular provision of this Agreement. The terms defined in the singular has a comparable meaning when used in the plural, and vice versa. References to a Person are also to its successors and permitted assigns. References to an agreement are to such agreement as amended, restated, modified or otherwise supplemented, from time to time. The term "dollars" and "\$" means United States dollars. The word "including" means "including without limitation" and the words "include" and "includes" have corresponding meanings.

8.9 Severability. If any term of provision of this Agreement is determined to be illegal, unenforceable or invalid in whole or in part for any reason, such illegal, unenforceable or invalid provisions or party thereof shall be stricken from this Agreement, and such provision shall not affect the legality, enforceability or validity of the remainder of this Agreement. If any provision or part thereof of this Agreement is stricken in accordance with the provisions of this Section 8.9, then such stricken provision shall be replaced, to extent possible, with a legal, enforceable and valid provision that is as similar in tenor to the stricken provision as is legally possible.

8.10 Notices. All notices required or permitted hereunder shall be in writing and shall be deemed effectively given: (a) upon personal delivery to the party to be notified, (b) when received after having been sent by registered or certified mail, return receipt requested and postage prepaid or (c) when received after deposit with a nationally recognized overnight courier, specifying next day delivery, with written verification of receipt. All communications shall be sent to the Company and to Purchaser at the address as set forth below or at such other address as Purchaser or the Company may designate by 10 days advance written notice to the Company (in the case of Purchaser) or Purchaser (in the case of the Company).

if to the Company:

Arrowhead Pharmaceuticals, Inc.
225 South Lake Avenue, Suite 1050
Pasadena, California 91101
Attn: General Counsel

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

Gibson, Dunn & Crutcher LLP
555 Mission Street, Suite 3000
San Francisco, California 94105
Attn: Ryan A. Murr

if to Purchaser:

Amgen Inc.
One Amgen Center Drive
Thousand Oaks, California 91320
Attn: Corporate Secretary

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

Amgen Inc.
One Amgen Center Drive
Thousand Oaks, California 91320
Attn: SVP, Business Development

8.11 Amendments and Waivers. Except as otherwise expressly set forth in this Agreement, any term of this Agreement may be amended and the observance of any term of this Agreement may be waived (either generally or in a particular instance and either retroactively or prospectively), only with the written consent of each party hereto (with respect to an amendment) and the written consent of each party from whom a waiver is sought (with respect to a waiver). No waiver of any provision or consent to any action shall constitute a waiver of any other provision or consent to any other action, whether or not similar. No waiver or consent shall constitute a continuing waiver or consent or commit a party to provide a waiver in the future except to the extent specifically set forth in writing.

8.12 Expenses. Except with respect to the registration of the Shares pursuant to Section 6.1, each party hereto will pay its own expenses in connection with the transactions contemplated hereby.

8.13 Persons Entitled to Benefits of Agreement. This Agreement is intended for the benefit of the parties hereto and their respective permitted successors and assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other person.

8.14 Further Assurances. The Company and Purchaser shall use their commercially reasonable efforts, in the most expeditious manner practicable, to satisfy or cause to be satisfied the intent and purposes of this Agreement by executing and delivering such instruments, documents and other writings as may be reasonably necessary or desirable.

[signature pages follow]

IN WITNESS WHEREOF, the undersigned parties have duly executed this Common Stock Purchase Agreement effective as of the date first above written.

COMPANY:

ARROWHEAD PHARMACEUTICALS, INC.

By: /s/ Chris Anzalone

Name: Chris Anzalone

Title: CEO

PURCHASER:

AMGEN INC.

By: /s/ David Meline

Name: David Meline

Title: EVP & CFO