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

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**AMENDMENT NO. 2  
TO  
FORM S-3  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933**

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**ARROWHEAD PHARMACEUTICALS, INC.**

(Exact name of Registrant as Specified in Its Charter)

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**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)

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**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)

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**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**

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**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.**

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## EXPLANATORY NOTE

Arrowhead Pharmaceuticals, Inc. is filing this Amendment No. 2 (this "Amendment") to its Registration Statement on Form S-3 (File No. 333-214311) (the "Registration Statement") as a Part II-only filing to amend Item 16 of Part II of the Registration Statement to include Exhibit 23.1, the Consent of Rose, Snyder & Jacobs. Accordingly, this Amendment consists only of the facing page, this explanatory note, Part II of the Registration Statement, the signature page to the Registration Statement, the exhibit index and Exhibit 23.1. The prospectus contained in the Registration Statement is unchanged and has been omitted.

**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. (3) |
| 23.1               | Consent of Rose, Snyder & Jacobs, the registrant's independent registered public accounting firm**                            |
| 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.
- (3) Filed as an exhibit to Amendment No. 1 to the registrant's Registration Statement on Form S-3 (File No. 333-214311), filed on November 25, 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;

- (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.

*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 December 2, 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.

| <b>Signature</b>  | <b>Title</b>  | <b>Date</b>      |
|---|---|------------------|
| <u>/s/ Christopher Anzalone</u><br>Christopher Anzalone | Chief Executive Officer and President and Director<br>(Principal Executive Officer)       | December 2, 2016 |
| <u>/s/ Kenneth Myszkowski</u><br>Kenneth A. Myszkowski  | Chief Financial Officer<br>(Principal Financial Officer and Principal Accounting Officer) | December 2, 2016 |
| <u>*</u><br>Douglass Given                              | Director, Chairman of the Board of Directors  | December 2, 2016 |
| <u>*</u><br>Mauro Ferrari                               | Director  | December 2, 2016 |
| <u>*</u><br>Edward W. Frykman                           | Director  | December 2, 2016 |
| <u>*</u><br>Michael S. Perry                            | Director  | December 2, 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

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We hereby consent to the incorporation by reference, in this Registration Statement on Form S-3/A of our report dated December 11, 2015, with respect to the consolidated financial statements of Arrowhead Pharmaceuticals, Inc. and Subsidiaries appearing in the Company's Annual Report on Form 10-K for the year ended September 30, 2015, and to the reference of our Firm under the caption "Experts" in the Registration Statement.

/s/ Rose, Snyder & Jacobs LLP

Rose, Snyder & Jacobs LLP

Encino, California  
December 2, 2016