

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

**Post-Effective Amendment No. 2 on
Form S-3
to
Form S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

ARROWHEAD RESEARCH CORPORATION

(Exact name of registrant as specified in its charter)

Delaware
(State of incorporation)

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

**225 South Lake Avenue, Suite 300
Pasadena, CA 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 Research Corporation
225 South Lake Avenue, Suite 300
Pasadena, CA 91101
626-304-3400**

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

**With copies to:
Ryan Murr
Ropes & Gray LLP
Three Embarcadero Center
San Francisco, CA 94111
(415) 315-6300**

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement.

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 filed 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. (Check one):

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

DEREGISTRATION OF SECURITIES

On December 28, 2009, Arrowhead Research Corporation filed a registration statement on Form S-1, with the Securities and Exchange Commission (the “SEC”) SEC File No. 333-1164039 (the “**Registration Statement**”) for the purpose of registering the sale of 1,936,350 shares of our Common Stock, \$0.001 par value per share (the “**Common Stock**”) by the selling security holders identified therein (the “**Selling Stockholders**”). The Common Stock covered by this prospectus consists of (i) 508,343 shares of Common Stock issued in a private placement that closed on December 11, 2009 (the “**Private Placement Shares**”), (ii) 508,343 shares of common stock issuable upon exercise of warrants (the “**December Warrants**”) issued in the same private placement that closed on December 11, 2009, and (iii) 919,664 shares issuable upon the exercise of warrants (the “**August Warrants**,” and together with the December Warrants, the “**Warrants**”) issued in a private placement with a final closing in August 2009. The Registration Statement became effective on January 7, 2010.

Post-Effective Amendment No. 1 to Form S-1 on Form S-3 was filed on June 1, 2010 and declared effective on June 11, 2010. This Post-Effective Amendment No. 2 to Form S-1 on Form S-3 is being filed to deregister, as of the effective date of this Post-Effective Amendment No. 2, shares of our Common Stock under the Registration Statement, issued in the Private Placement that have not been sold pursuant to the Registration Statement.

The registration rights agreement entered into between the Selling Stockholders and the Company only required the Company to maintain the registration of the Private Placement Shares until, at the latest, one (1) year from the closing of the private Placement on December 11, 2009. Therefore, the Company is no longer required to maintain the registration of the Private Placement Shares.

The remaining 1,207,032 shares issuable upon exercise of the Warrants shall continue to be registered under the Registration Statement.

All share amounts are adjusted for the Company’s 1 for 10 split effected on November 17, 2012.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, 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 Post-Effective Amendment No. 2 to the Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Pasadena, State of California, on February 16, 2012.

ARROWHEAD RESEARCH CORPORATION

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

Pursuant to the requirements of the Securities Act of 1933, as amended, this Post-Effective Amendment No. 2 to the Registration Statement has been by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ CHRISTOPHER ANZALONE</u> Christopher Anzalone	Chief Executive Officer and President and Director (Principal Executive Officer)	February 16, 2012
<u>/s/ KENNETH A. MYSZKOWSKI</u> Kenneth A. Myszkowski	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	February 16, 2012
<u>*</u> R. Bruce Stewart	Executive Chairman of the Board	February 16, 2012
<u>*</u> Edward W. Frykman	Director	February 16, 2012
<u>*</u> Charles P. McKenney	Director	February 16, 2012
<u>Mauro Ferrari</u>	Director	
<u>Douglass Given</u>	Director	
<u>Michael S. Perry</u>	Director	

*By: /s/ Kenneth A. Myszkowski
Kenneth A. Myszkowski
Attorney-in-fact