

Prospectus

Arrowhead Research Corporation

1,597,072 shares of Common Stock

This prospectus covers the sale of an aggregate of 1,597,072 shares of our Common Stock, \$0.001 par value per share (the “Shares”), by the selling security holders identified in this prospectus (collectively with any holder’s transferee, pledgee, donee or successor, the “**Selling Stockholders**”). The Shares covered by this prospectus were issued in a private placement with closings on September 30, 2011 and October 5, 2011 (the “**Private Placement**”).

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 Capital Market under the symbol “ARWR.” On January 12, 2012, the closing sale price of our Common Stock on The NASDAQ Capital Market was \$5.21 per share. Our principal executive offices are located at 225 South Lake Avenue, Suite 300, 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 January 13, 2012

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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 Research Corporation. See “Where You Can Find Additional Information” for more information, page 6. You should rely only on the information contained in or incorporated by reference in this prospectus or a prospectus supplement. The Company has not authorized anyone to provide you with different information. This document 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 forward-looking statements within the meaning of the federal securities laws. You can identify forward-looking statements by the use of the words “believe,” “expect,” “anticipate,” “intend,” “estimate,” “project,” “will,” “should,” “may,” “plan,” “intend,” “assume” and other expressions which predict or indicate future events and trends and which do not relate to historical matters. You should not rely on forward-looking statements, because they involve known and unknown risks, uncertainties and other factors, some of which are beyond the control of the Company. These risks, uncertainties and other factors may cause the actual results, performance or achievements of the Company to be materially different from the anticipated future results, performance or achievements expressed or implied by the forward-looking statements.

Factors that might cause these differences include the following:

- the integration of multiple technologies and programs;
- the ability to successfully complete development and commercialization of products and the Company’s expectations regarding market growth;
- the cost, timing, scope and results of ongoing safety and efficacy trials of preclinical and clinical testing;
- the ability to successfully complete product research and further development;
- the volume and profitability of product sales of future products;
- changes in existing and potential relationships with corporate collaborators and partners;
- the availability, cost, delivery and quality of materials supplied by contract manufacturers;
- the timing, cost and uncertainty of obtaining regulatory approvals of our products;
- the ability to obtain substantial additional funding;
- the ability to develop and commercialize products before competitors that are superior to the alternatives developed by competitors;
- the ability to retain certain members of management;
- the Company’s expectations regarding research and development expenses and general and administrative expenses;
- the Company’s expectations regarding cash balances, capital requirements, anticipated revenue and expenses, including infrastructure expenses;
- our belief regarding the validity of our patents and potential litigation; and
- other factors detailed from time to time in filings with the Securities and Exchange Commission.

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In addition, the 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, and elsewhere in the documents incorporated by reference in this prospectus, may result in these differences. You should carefully review all of these factors. These forward-looking statements were based on information, plans and estimates at the date of this prospectus, and we assume no obligation to update any forward-looking statements to reflect changes in underlying assumptions or factors, new information, future events or other changes.

ABOUT THE COMPANY

Unless otherwise noted, (1) the term “Arrowhead Research” refers to Arrowhead Research Corporation, a Delaware corporation, formerly known as InterActive Group, Inc., (2) the terms “Arrowhead,” the “Company,” “we,” “us,” and “our,” refer to the ongoing business operations of Arrowhead and its subsidiaries, whether conducted through Arrowhead Research or a subsidiary of the company, and (3) the term “Common Stock” refers to shares of Arrowhead Research’s Common Stock and the term “stockholder(s)” refers to the holders of Common Stock or securities exercisable for Common Stock.

Arrowhead Research Corporation is a nanomedicine company developing innovative therapeutic products at the interface of biology and nanoengineering to cure disease and improve human health. Arrowhead addresses its target markets through ownership in subsidiaries that are selected based on synergies in their technology, and clinical and business strategies. By focusing on specific related applications of nanomedicine, Arrowhead and its subsidiaries leverage shared expertise and resources to develop pioneering therapeutic platforms for large unmet medical needs. Arrowhead is a leader in delivering small RNAs for gene silencing, and has programs in anti-obesity therapeutics and regenerative medicine.

Arrowhead’s portfolio includes Arrowhead Madison, an RNAi therapeutics research company, two majority owned subsidiaries, Calando Pharmaceuticals, Inc., a leader in delivering small RNAs for gene silencing and Ablaris Therapeutics, Inc. (“Ablaris”), an anti-obesity therapeutics company and minority investments in Nanotope, Inc., a regenerative medicine company and Leonardo Biosystems, Inc., a multistage drug delivery company.

Our common stock is listed on the Nasdaq Capital Market under the symbol “ARWR”.

Our executive offices are located at 225 South Lake Avenue, Suite 300, 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 6 and “Incorporation of Certain Information by Reference” on page 7.

RISK FACTORS

We are a development-stage company and we have limited historical operations. 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 any amendment or updates to our risk factors reflected in subsequent filings with the SEC, including the applicable prospectus supplement. Our business, financial condition or results of operations 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 incorporated documents 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.

We recently acquired significant assets from Roche related to RNAi technologies, and Roche retains a right of first negotiation over certain candidates developed based on the acquired RNAi technologies.

On October 21, 2011, we entered into a Stock and Asset Purchase Agreement with Hoffmann-La Roche Inc. and F. Hoffmann-La Roche Ltd, pursuant to which we purchased from Roche (i) all of the outstanding common

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stock of Roche Madison Inc. and (ii) the intellectual property rights currently held by Roche related to its RNAi business and identified in the RNAi Purchase Agreement. Pursuant to the RNAi purchase agreement, Roche has a limited right of first negotiation on certain product candidates developed by us relating to the purchased assets. This right of first negotiation applies to all three Existing Candidates (disease targets previously studied by Roche) and to up to five other drug candidates that we may develop. The right of first negotiation could delay the process of entering into a strategic relationship related to any product candidates developed based on the acquired RNAi technologies and could adversely impact our ability to attract a partner or acquirer for any such product candidates and could negatively impact the prospects for a larger company to acquire Arrowhead.

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 SECURITYHOLDERS

The Company has included in this prospectus 1,597,072 shares of Common Stock issued upon the closing of the Private Placement.

In connection with the Private Placement, we have agreed to file a registration statement with the Securities and Exchange Commission covering the resale of the Private Placement Shares.

The following table sets forth certain information regarding the Selling Stockholders and the shares of Common Stock beneficially owned by them, which is based on information that is available to us as of January 6, 2012. Selling Stockholders may offer shares under this prospectus from time to time and may elect to sell none, some or all of the shares set forth next to their name. As a result, we cannot estimate the number of shares of Common Stock that a Selling Stockholder will beneficially own after termination of sales under this prospectus. In addition, a Selling Stockholder may have sold, transferred or otherwise disposed of all or a portion of that holder's shares of Common Stock since the date on which they 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. Shares of our common stock subject to options or warrants that are currently exercisable or exercisable within 60 days of January 6, 2012 are considered outstanding and beneficially owned by the person holding the options or warrants for the purpose of calculating the percentage ownership of that person but not for the purpose of calculating the percentage ownership of any other person.

The Company implemented a 1 for 10 reverse split of its common stock on November 17, 2011. All share amounts have been adjusted to reflect post-split amounts and percentages of beneficial ownership are based on 10,525,941 common shares issued and outstanding as of January 6,

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2012. Shares not outstanding but deemed beneficially owned by virtue of the right of a person to acquire them as of January 6, 2012, or within sixty days of such date, are treated as outstanding only when determining the percentage owned by such individual and when determining the percentage owned by a group of which such individual is a member.

We are relying on written commitments from the Selling Stockholders to notify us of any changes in their beneficial ownership after the date they originally provided this information. See "Plan of Distribution" beginning on page 5.

<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>
Melinda Boyd	202,268(3)	26,315	175,953	1.66%
M. Robert & Phyllis Ching	1,788,696(4)	263,157	1,525,539	7.93%
Virginia Drake	273,157(5)	138,157	135,000	1.28%
Fanelli Haag PLLC (6)	12,500(7)	8,000	4,500	*
Galloway Limited	727,233(8)	727,233	—	—
Port Erin BioPharma Investments	105,263(9)	105,263	—	—
Regent Pacific Group Limited	328,947(10)	328,947	—	—

*Less than 1%.

- (1) If required, information about other selling security holders, except for any future transferees, pledgees, donees or successors of selling security holders 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 offered by the Selling Stockholders hereby are sold and that the Selling Stockholders buy or sell no additional shares of Common Stock prior to the completion of this offering.
- (3) Includes 118,370 shares and 67,409 shares issuable upon exercise of common stock purchase warrants. Also includes 16,489 shares of Common Stock issuable upon conversion of Series A Preferred Stock, conversion of which is subject to stockholder approval, including additional shares of Series A Preferred Stock issuable in in-kind distribution as payment of dividends through March 31, 2012.
- (4) Includes 793,611 shares and 857,667 shares issuable upon the exercise of common stock purchase warrants of which 45,600 shares and 18,240 shares issuable upon the exercise of common stock purchase warrants held by BBB Assets for which M. Robert Ching holds investment and voting control. Also includes 137,418 shares of Common Stock issuable upon conversion of Series A Preferred Stock, conversion of which is subject to stockholder approval, including additional shares of Series A Preferred Stock issuable in in-kind distribution as payment of dividends through March 31, 2012. Certain of the warrants and the conversion of the preferred stock are subject to a contractual conversion blocker whereby the right to exercise or convert such warrant or preferred stock is limited such that Dr. and Mrs. Ching will not have greater than 9.99% beneficial ownership of outstanding Common Stock.
- (5) Includes 253,157 shares and 20,000 shares issuable upon exercise of common stock purchase warrants.
- (6) Thomas Haag, partner at Fanelli Haag PLLC, is former Chief Counsel to the Company. Fanelli Haag currently serves as outside patent counsel to the Company and several of its affiliates.
- (7) Includes 8,000 shares and 4,500 shares issuable upon the exercise of stock options. Dr. Haag and his partner, Dr. Fanelli share investment and voting power with respect to the 8,000 shares. Dr. Haag has sole investment and voting power with respect to the shares issuable upon exercise of the stock options.
- (8) Denham Eke, Director, holds voting and investment control with respect to the shares owned by Galloway Limited.
- (9) Ross Jones holds voting and investment control with respect to the shares owned by Port Erin BioPharma Investments.
- (10) James Mellon and Jamie Gibson, CEO, holds voting and investment control with respect to the shares owned by Regent Pacific Group Limited.

PLAN OF DISTRIBUTION

The Shares offered by this prospectus may be sold by the Selling Stockholders. Such sales may be made at fixed prices that may be changed, at market prices prevailing at the time of sale, at prices related to such prevailing market prices, or at negotiated prices, and may be made in the over-the-counter market or any exchange on which our common stock may then be listed, or otherwise. In addition, the Selling Stockholders may sell some or all of their Shares through:

- a block trade in which a broker-dealer may resell a portion of the block, as principal, in order to facilitate the transaction;
- purchases by a broker-dealer, as principal, and resale by the broker-dealer for its account;
- ordinary brokerage transactions and transactions in which a broker solicits purchasers;
- in negotiated transactions;
- in a combination of any of the above methods of sale; or
- any other method permitted under applicable law.

The Selling Stockholders may also engage in short sales against the box, puts and calls and other hedging transactions in the Shares or derivatives of the Shares and may sell or deliver the Shares in connection with these trades. For example, the Selling Stockholders may:

- enter into transactions involving short sales of our common stock by broker-dealers;
- sell our common stock short themselves and redeliver such shares to close out their short positions;
- enter into option or other types of transactions that require the Selling Stockholder to deliver shares of common stock to a broker-dealer, who will then resell or transfer the common stock under this prospectus; or
- loan or pledge shares of common stock to a broker-dealer, who may sell the loaned shares or, in the event of default, sell the pledged shares.
- There is no assurance that any of the Selling Stockholders will sell any or all of the Shares offered by them.

The Selling Stockholders may negotiate and pay broker-dealers commissions, discounts or concessions for their services. Broker-dealers engaged by the Selling Stockholders may allow other broker-dealers to participate in resales. However, the Selling Stockholders and any broker-dealers involved in the sale or resale of our common stock may qualify as “underwriters” within the meaning of the Section 2(a)(11) of the Securities Act. In addition, the broker-dealers’ commissions, discounts or concessions may qualify as underwriters’ compensation under the Securities Act. If the Selling Stockholders qualify as “underwriters,” they will be subject to the prospectus delivery requirements of the Securities Act.

In addition to selling their shares of common stock under this prospectus, the Selling Stockholders may:

- transfer their common stock in other ways not involving market makers or established trading markets, including, but not limited to, directly by gift, distribution, privately negotiated transactions in compliance with applicable law or other transfer; or
- sell their common stock under Rule 144 of the Securities Act rather than under this prospectus, if the transaction meets the requirements of Rule 144. Each Selling Stockholder will bear all expenses with respect to the offering of common stock by such Selling Stockholder.

Under the applicable rules and regulations of the Exchange Act, any person engaged in the distribution of the Shares may not simultaneously engage in market making activities with respect to our common stock for a period of

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two business days prior to the commencement of such distribution. In addition, each Selling Stockholder will be subject to the applicable provisions of the Exchange Act and the associated rules and regulations under the Exchange Act, including Regulation M, which provisions may limit the timing of purchases and sales of shares of our common stock by the Selling Stockholders.

The Selling Stockholders may from time to time pledge or grant a security interest in some or all of the Shares owned by them and, if they default in the performance of their secured obligations, the pledges or secured parties may offer and sell the Shares from time to time under this prospectus after an amendment has been filed under Rule 424(b)(3) or other applicable provision of the Securities Act of 1933 amending the list of Selling Stockholders to include the pledge, transferee or other successors in interest as selling stockholders under this prospectus.

The Selling Stockholders also may transfer the Shares in other circumstances, in which case the respective pledgees, donees, transferees or other successors in interest will be the selling beneficial owners for purposes of this prospectus and may sell the Shares from time to time under this prospectus after an amendment has been filed under Rule 424(b)(3) or other applicable provision of the Securities Act amending the list of Selling Stockholders to include the pledge, transferee or other successors in interest as selling stockholders under this prospectus.

We will make copies of this prospectus available to the Selling Stockholders and have informed them of the need to deliver copies of this prospectus to purchasers at or prior to the time of any sale of the Shares.

We will bear all costs, expenses and fees in connection with the registration of the Shares. The Selling Stockholders will bear all commissions and discounts, if any, attributable to the resale of the Shares. The Selling Stockholders may agree to indemnify any broker-dealer or agent that participates in transactions involving sales of the Shares against certain liabilities, including liabilities arising under 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, 2011, have been audited by Rose, Snyder & Jacobs, a corporation of Certified Public Accountants, 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 Ropes & Gray LLP, San Francisco, California.

WHERE YOU CAN FIND MORE INFORMATION

We must comply with the informational requirements of the Securities Exchange Act of 1934, as amended, and we are required to file reports and proxy statements and other information with the Securities and Exchange Commission. You may read and copy these reports, proxy statements and other information at the Public Reference Room maintained by the Securities and Exchange Commission 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 Securities and Exchange Commission at 1-800-SEC-0330 for further information about the public reference room. The Securities and Exchange Commission also maintains a website that contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the Securities and Exchange Commission. You may access the Securities and Exchange Commission's web site at <http://www.sec.gov>. We maintain a website at www.arrowheadresearch.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 Securities and Exchange Commission allows us to incorporate by reference in this prospectus the information that we file with them. 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 Securities and Exchange Commission 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 Securities and Exchange Commission under Section 13(a), 13(c), 14, or 15(d) of the Securities Exchange Act of 1934, as amended, until all of the shares of common stock and warrant shares covered by this prospectus are sold:

- The Company's Annual Report on Form 10-K for the fiscal year ended September 30, 2011, filed on December 20, 2011;
- The Company's Current Reports on Form 8-K filed on October 6, 2011, October 24, 2011 (as amended by the Company's Current Report on Form 8-K/A filed on December 30, 2011), October 26, 2011, October 27, 2011, November 15, 2011 and November 17, 2011;
- The description of the Company's common stock contained in its registration statement on Form 8-A/A (Registration No. 000-21898), filed on November 1, 2010, 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 Street, Suite 300, Pasadena, CA 91101 or may be made telephonically at (626) 304-3400.

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.