

1,000,000 Shares of Common Stock



ABOUT THIS PROSPECTUS SUPPLEMENT

We are offering 1,000,000 shares of our Common Stock in this offering at a public offering price of \$0.40 per share. This is a best efforts offering being made directly by Arrowhead, without an underwriter or placement agent. We are not required to sell any specific number or dollar amount of securities in this offering, but will use our best efforts to sell the securities offered. We will receive all of the proceeds from any securities sold in this offering. If we sell the maximum number of shares offered by this prospectus supplement, the total gross offering proceeds to us, before offering expenses, will be approximately \$400,000. This offering will continue until the earlier of the sale of all shares offered by this prospectus supplement or October 31, 2011.

Our Common Stock is quoted on The NASDAQ Capital Market under the symbol "ARWR." On October 21, 2011, the last reported sales price of our Common Stock on The NASDAQ Capital Market was \$0.46 per share.

Investing in our securities involves a high degree of risk. Before buying any securities, you should read the discussion of material risks of investing in our Common Stock under the heading "[Risk Factors](#)" beginning on page S-4 of this prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is October 24, 2011.

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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.

This prospectus supplement and the accompanying prospectus are part of a “shelf” registration statement on Form S-3 (File No. 333-176159) that we filed with the Securities and Exchange Commission on August 8, 2011 and was declared effective on August 17, 2011.

This document is in two parts. The first part is this prospectus supplement, which describes the specific details of this offering of our Common Stock and also adds to and updates information contained in or incorporated by reference into the accompanying prospectus. The second part is the accompanying prospectus, which gives more information about us and the securities we may offer from time to time under our “shelf” registration statement. To the extent there is a conflict between the information contained, or referred to, in this prospectus supplement, on the one hand, and the information contained, or referred to, in the accompanying prospectus or any document incorporated by reference therein, on the other hand, the information in this prospectus supplement shall control.

We have not authorized any broker, dealer, salesperson or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus supplement and the accompanying prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus supplement or the accompanying prospectus. This prospectus supplement and the accompanying prospectus do not constitute an offer to sell or the solicitation of an offer to buy Common Stock, nor do this prospectus supplement and the accompanying prospectus constitute an offer to sell or the solicitation of an offer to buy Common Stock in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus supplement and the accompanying prospectus 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 supplement and any accompanying prospectus is delivered or Common Stock are sold on a later date.

Prospectus Supplement Summary

This summary highlights selected information appearing elsewhere or incorporated by reference in this prospectus supplement and accompanying prospectus and may not contain all of the information that is important to you. This prospectus supplement and the accompanying prospectus include or incorporate by reference information about the Common Stock we are offering as well as information regarding our business and detailed financial data. You should read this prospectus supplement and the accompanying prospectus in their entirety, including the information incorporated by reference.

BUSINESS OVERVIEW

Arrowhead Research Corporation (“Arrowhead” or the “Company”) 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 currently focused on the preclinical and clinical development of therapeutics for the treatment of cancer and obesity, as well as the regeneration of wounded or diseased tissue.

Arrowhead’s portfolio includes two majority owned subsidiaries, Calando Pharmaceuticals, Inc. (“Calando”), 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. (“Nanotope”), a regenerative medicine company and Leonardo Biosystems, Inc. (“Leonardo”), a multistage drug delivery company. Additionally, Arrowhead recently acquired a new subsidiary in connection with the acquisition of certain assets from Roche, as described below.

On October 21, 2011, Arrowhead entered into a Stock and Asset Purchase Agreement (the “RNAi Purchase Agreement”) with Hoffmann-La Roche Inc. and F. Hoffmann-La Roche Ltd (collectively, “Roche”), pursuant to which the Company purchased from Roche (i) all of the outstanding common stock of Roche Madison Inc. (“Roche Madison”) and (ii) the intellectual property rights currently held by Roche related to its RNAi business and identified in the RNAi Purchase Agreement (the “Transaction”). In consideration for the purchase of Roche Madison and the Roche RNAi assets, the Company issued to Roche a promissory note with a principal value of \$50,000 and 9,017,021 shares of Common Stock. Additionally, the Company agreed that, subject to stockholder approval under the NASDAQ Marketplace Rules, the Company would issue an additional 1,465,626 shares of common stock, plus a number of additional shares equal to 9.9% of the shares of common stock (or common stock equivalents) sold by the Company in capital raising transactions within one year from the closing, but only with respect to the first \$3,118,615 of gross offering proceeds (the “Top-up Shares”). If the Company is prohibited from issuing the Top-up Shares due to NASDAQ Marketplace Rules, then the Company must instead pay the cash value of the Top-up Shares, based on the then-current fair value of such shares.

Pursuant to the RNAi Purchase Agreement, Roche has a limited right of first negotiation on certain product candidates developed by the Company and its affiliates relating to the purchased assets. This right of first negotiation applies to all three Existing Candidates (as defined in the RNAi Purchase Agreement) and for up to five other “Clinical Candidates” (as defined in the RNAi Purchase Agreement).

In addition to the consideration paid by the Company at the closing of the Transaction, the Company is obligated to make certain royalty and milestone payments to Roche upon the occurrence of certain events after drug approval. For certain product candidates that are developed by the Company or its affiliates and that are covered by a valid claim by the patent rights transferred in the Transaction for which the Company and Roche do not enter into a licensing arrangement, the Company will be obligated to pay a 3% royalty on Net Sales (as defined in the RNAi Purchase Agreement), provided that the royalty rate may be reduced or offset in certain circumstances. The Company will also be obligated to make cash payments to Roche upon the achievement of various milestones, including the first regulatory approval of an Existing Candidate in certain jurisdictions and upon certain annual sales milestones for Existing Candidates that may receive regulatory approval. The potential payments range from \$2,500,000 to \$6,000,000 per milestone.

CORPORATE INFORMATION

We were incorporated in Delaware. Our executive offices are located at 225 South Lake Avenue, Suite 300, Pasadena CA 91101 and our telephone number is (626) 304-3400. Our website is located at www.arrowres.com. We have not incorporated by reference into this prospectus supplement or the accompanying prospectus the information in, or that can be accessed through, our website, and you should not consider it to be a part of this prospectus supplement or the accompanying prospectus.

THE OFFERING

Common Stock we are offering	1,000,000 shares
Common Stock to be outstanding after this offering	105,260,722 shares
Use of proceeds	We intend to use the net proceeds of this offering for general corporate purposes, including working capital, product development and capital expenditures. See "Use of proceeds."
NASDAQ Capital Market symbol	ARWR

The number of shares of Common Stock shown above to be outstanding after this offering is based on the 104,260,722 shares outstanding as of October 21, 2011, which gives effect to the issuance of 9,017,021 shares of common stock in connection with the RNAi Purchase Agreement, but does not include (A) 2,671,053 shares of common stock underlying our outstanding Series A Convertible Preferred Stock or (B) any options, warrants or other convertible securities issued and outstanding as of the date of this prospectus. For additional information about our outstanding options, warrants and other convertible securities, please refer to "Incorporation of Certain Documents by Reference."

Special Note Regarding Forward-Looking Statements

This prospectus supplement 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.

In addition, the factors described under the section captioned “Risk Factors” in this prospectus supplement, 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 supplement, 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.

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 or Quarterly Report 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 any 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 supplement.

Material Changes

Roche Acquisition

On October 21, 2011, Arrowhead entered into a Stock and Asset Purchase Agreement (the “RNAi Purchase Agreement”) with Hoffmann-La Roche Inc. and F. Hoffmann-La Roche Ltd (collectively, “Roche”), pursuant to which the Company purchased from Roche (i) all of the outstanding common stock of Roche Madison Inc. (“Roche Madison”) and (ii) the intellectual property rights currently held by Roche related to its RNAi business and identified in the RNAi Purchase Agreement (the “Transaction”). In consideration for the purchase of Roche Madison and the Roche RNAi assets, the Company issued to Roche a promissory note with a principal value of \$50,000 and 9,017,021 shares of Common Stock. Additionally, the Company agreed that, subject to stockholder approval under the NASDAQ Marketplace Rules, the Company would issue an additional 1,465,626 shares of common stock, plus a number of additional shares equal to 9.9% of the shares of common stock (or common stock equivalents) sold by the Company in capital raising transactions within one year from the closing, but only with respect to the first \$3,118,615 of gross offering proceeds (the “Top-up Shares”). If the Company is prohibited from issuing the Top-up Shares due to NASDAQ Marketplace Rules, then the Company must instead pay the cash value of the Top-up Shares, based on the then-current fair value of such shares.

Pursuant to the RNAi Purchase Agreement, Roche has a limited right of first negotiation on certain product candidates developed by the Company and its affiliates relating to the purchased assets. This right of first negotiation applies to all three Existing Candidates (as defined in the RNAi Purchase Agreement) and for up to five other “Clinical Candidates” (as defined in the RNAi Purchase Agreement).

In addition to the consideration paid by the Company at the closing of the Transaction, the Company is obligated to make certain royalty and milestone payments to Roche upon the occurrence of certain events after drug approval. For certain product candidates that are developed by the Company or its affiliates and that are covered by a valid claim by the patent rights transferred in the Transaction for which the Company and Roche do not enter into a licensing arrangement, the Company will be obligated to pay a 3% royalty on Net Sales (as defined in the RNAi Purchase Agreement), provided that the royalty rate may be reduced or offset in certain circumstances. The Company will also be obligated to make cash payments to Roche upon the achievement of various milestones, including the first regulatory approval of an Existing Candidate in certain jurisdictions and upon certain annual sales milestones for Existing Candidates that may receive regulatory approval. The potential payments range from \$2,500,000 to \$6,000,000 per milestone.

Recent Financings

- On October 21, 2011, Arrowhead and Lincoln Park Capital Fund, LLC, an Illinois limited liability company (“LPC”), entered into a purchase agreement (the “Purchase Agreement”), whereby LPC agreed to purchase up to \$15 million of Company common stock, subject to certain limitations, from time to time during the three-year term of the Purchase Agreement. Additionally, pursuant to a registration rights agreement dated such date between the Company and LPC, the Company agreed to file a registration statement related to the transaction with the U.S. Securities & Exchange Commission (“SEC”) covering the resale of the shares that have been and may be issued to LPC under the Purchase Agreement. After the SEC declares effective the registration statement related to the resale of such shares, we will have the right, in our sole discretion, over a 36-month period to sell up to \$15 million of our common stock (subject to certain limitations) to LPC, depending on certain conditions as set forth in the Purchase Agreement.
- On October 21, 2011, the Company entered into Subscription Agreements (the “Series A Subscription Agreements”) with certain accredited investors (the “Series A Purchasers”), pursuant to which the Company agreed to issue and sell an aggregate

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of 915 shares of Series A Preferred Convertible Stock, \$0.001 par value per share (the "Series A Preferred"), at a purchase price of \$1,000 per share. The aggregate purchase price to be paid by the Series A Purchasers for the shares of Series A Preferred is \$915,000. Upon receipt of stockholder approval, each share of Series A Preferred will automatically convert into 2,631 shares of common stock, subject to a 19.99% beneficial ownership conversion limit. The rights, preferences and privileges of the Series A Preferred Stock are as follows:

- *Ranking.* The Series A Shares will, with respect to rights upon liquidation, dissolution, or winding up of the Company, rank senior to the Company's common stock and any class or series of Company capital stock hereafter created which does not provide that such shares of capital stock rank on parity with or senior to the Series A Shares as to rights on liquidation, winding-up and dissolution of the Company.
 - *Conversion Rights.* Each Series A Share will be convertible, at the option of the holders thereof, into an a number of shares of the Company's common stock equal to \$1,000 divided by \$0.38. Such holder may not convert any Series A Shares into shares of the Company's common stock if, after giving effect to such conversion, such holder would beneficially own in excess of 19.99% of the number of shares of the Company's common stock outstanding immediately after giving effect to such conversion.
 - *Dividends.* Holders of Series A Shares shall be entitled to receive a cumulative dividend of 10% of the face amount of the Series A Shares per annum, which will accrue semi-annually, from the date of issue through the date the shares are eligible for conversion pursuant to the Series A Subscription Agreement, and will be paid on June 30 and December 31 of each year in preference to any dividends to be paid on the Common Stock or any junior securities.
 - *Liquidation Preference.* In the event of any liquidation, dissolution or winding up of the Company, the holders of Series A Shares shall be entitled to receive, prior and in preference to any distribution of any of the assets or surplus funds of the Company to the holders of the Common Stock by reason of their ownership thereof, an amount equal to \$1,000 per each Series A Share then held by holders of Series A Shares. If upon the occurrence of such event, the assets and funds distributed among the holders of the Series A Shares shall be insufficient to permit the payment of the full preferential amount, then the entire assets and funds of the Company legally available for distribution shall be distributed ratably among the holders of the Series A Shares in proportion to the preferential amount each such holder is otherwise entitled to receive.
 - *Voting Rights.* The Series A Shares do not have any voting rights, except with respect to the protective provisions discussed below.
 - *Protective Provisions.* So long as any shares of Series A Shares are outstanding, in addition to any other vote or approval required under the Company's Certificate of Incorporation or By-laws, as amended, the Company will not, without the consent of the holders of a majority of the outstanding shares of Series A shares, either directly or by amendment, merger, consolidation, or otherwise: (i) amend, alter, or repeal any provision of the Certificate of Incorporation or Bylaws in a manner adverse to the Series A Shares or (ii) increase the authorized number of shares of Series A Shares or issue additional shares of Series A Shares, except as may be necessary to pay dividends on the outstanding shares of Series A Shares.
- On October 21, 2011, the Company entered into a Subscription Agreement (the "Common Subscription Agreement") with a single accredited investor (the "Common Shares Purchaser"), pursuant to which the Company agreed to issue and sell an aggregate of 6,750,000 shares of common stock, \$0.001 par value per share (the "Common Shares"), at a purchase price of \$0.37 per share. The aggregate purchase price to be paid by the Purchasers for the shares of common stock was \$2,497,500.

Use of Proceeds

We estimate that the net proceeds from the sale of the Common Stock offered by this prospectus, after deducting estimated offering expenses payable by us, will be approximately \$375,000.

We intend to use the net proceeds of this offering for general corporate purposes, including working capital, capital expenditures, research and development expenditures and clinical trial expenditures. A portion of the net proceeds may also be used for the acquisition of businesses, products and technologies that are complementary to ours, or for other strategic purposes.

Dilution

If you invest in our Common Stock, you will experience dilution to the extent of the difference between the price per share you pay in this offering and the net tangible book value per share of our Common Stock immediately after this offering.

Our net tangible book value as of June 30, 2011 was approximately \$9.5 million, or \$0.132 per share of Common Stock. Net tangible book value per share is equal to our total tangible assets minus total tangible liabilities, all divided by the number of shares of Common Stock outstanding as of June 30, 2011. Assuming we sell 1,000,000 shares of Common Stock, the maximum number of shares we are offering pursuant to this prospectus supplement, at an offering price of \$0.40 per share, and after deducting our estimated offering expenses payable by us, our as adjusted net tangible book value would have been approximately \$9.9 million, or approximately \$0.135 per share of Common Stock, as of June 30, 2011. This represents an immediate increase in net tangible book value of approximately \$0.003 per share to existing stockholders and an immediate dilution of approximately \$0.265 per share to new investors. The following table illustrates this calculation on a per share basis:

Offering price for one share of Common Stock	\$ 0.40
Net tangible book value per share as of June 30, 2011	\$0.132
Increase per share attributable to the offering	<u>\$0.003</u>
As adjusted net tangible book value per share after this offering	\$0.135
Dilution per share to new investors	<u>\$0.265</u>

The above illustration of dilution per share to investors participating in this offering assumes no exercise of outstanding options to purchase our Common Stock or outstanding warrants to purchase shares of our Common Stock. The exercise of outstanding options and warrants having an exercise price less than the offering price will increase dilution to new investors.

The foregoing dilution calculation is based on a total of 71,833,693 shares of common stock issued and outstanding as of June 30, 2011. As of the date of this prospectus, and prior to the issuance of the shares offered hereby, we had 104,260,722 shares of common stock issued and outstanding, which would have increased the net tangible book value per share by \$0.003 and would have resulted in dilution per share to new investors of \$0.306, assuming in each case no changes in the net tangible book value, other than from the sale of shares hereunder.

Plan of Distribution

This is a best efforts offering being made directly by Arrowhead, without an underwriter or placement agent. We are not required to sell any specific number or dollar amount of securities in this offering, but will use our best efforts to sell the securities offered. We will receive all of the proceeds from any securities sold in this offering. If we sell the maximum number of shares offered by this prospectus supplement, the total gross offering proceeds to us, before offering expenses, will be \$400,000.

We expect to enter into a stock purchase agreement with one or more institutional investors for the sale and purchase of the shares offered under this prospectus supplement. Any such stock purchase agreement will contain customary representations and warranties by us and each of the purchasers, and provides that the obligations of the purchasers to purchase the shares will be subject to certain customary conditions precedent.

This offering will continue until the earlier of the sale of all shares offered by this prospectus supplement or October 31, 2011.

NASDAQ CAPITAL MARKET

Our Common Stock is listed on The NASDAQ Capital Market under the symbol "ARWR."

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, 2010, 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

Various legal matters with respect to the validity of the shares of Common Stock offered by this prospectus supplement will be passed upon for us by Ropes & Gray LLP.

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.arrowres.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 supplement 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 Documents by Reference

The Securities and Exchange Commission allows us to incorporate by reference in this prospectus supplement 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 supplement. Later information that we file with the Securities and Exchange Commission will automatically update and supersede the information in this prospectus supplement, any other supplement to the prospectus 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 covered by this prospectus are sold:

- The Company's Annual Report on Form 10-K for the fiscal year ended September 30, 2010, filed on December 22, 2010;
- The Company's Quarterly Reports on Form 10-Q for the fiscal quarter ended December 31, 2010, filed on February 10, 2011, for the fiscal quarter ended March 31, 2011, filed on May 12, 2011 and for the fiscal quarter ended June 20, 2011, filed on August 8, 2011;
- The Company's Definitive Proxy Statement on Schedule 14-A, filed on June 27, 2011;
- The Company's Current Reports on Form 8-K filed on November 30, 2010, December 9, 2010, December 14, 2010, December 20, 2010, January 14, 2011, January 21, 2011, January 24, 2011, February 3, 2011, April 5, 2011, May 12, 2011, June 9, 2011, August 8, 2011, August 9, 2011, October 6, 2011 and October 24, 2011;

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- 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

We also incorporate by references 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 supplement is a part, provided that all documents "furnished" by the Company to the SEC and not "filed" are not deemed incorporated by reference herein.

You should rely only on the information incorporated by reference or provided in the accompanying prospectus or this prospectus supplement. We have not authorized anyone to provide you with different information. You should not assume that the information contained in the accompanying prospectus or this 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 the accompanying prospectus and any accompanying prospectus supplement is delivered or securities are sold on a later date.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address:

Arrowhead Research Corporation
Attn: Corporate Secretary
225 South Lake Street, Suite 300
Pasadena, CA 91101
Phone: (626) 304-3400.

Copies of these filings are also available, without charge, on our Internet website at www.arrowres.com after they are filed electronically with the SEC.

Prospectus

\$50,000,000

Arrowhead Research Corporation

Common Stock

Warrants

This prospectus will allow us to issue, from time to time in one or more offerings,

- shares of our common stock, and
- warrants to purchase shares of our common stock.

The common stock and warrants may be offered and sold separately or together in one or more series of issuances, for an aggregate dollar amount not to exceed \$50,000,000. We will provide specific terms of the securities in supplements to this prospectus.

In this prospectus, we refer to the common stock and the warrants collectively as the “securities.”

This prospectus provides a general description of the securities we may offer. We may sell the securities to or through underwriters, directly to investors or through agents, or through a combination of these methods. Each time we sell securities we will provide a prospectus supplement that will contain specific information about the terms of that sale, including the names of any underwriters or agents, and may add, update or change the information contained in this prospectus. You should read this prospectus and any prospectus supplement, and the information incorporated by reference herein and therein, carefully before you invest in our securities. This prospectus may not be used to consummate a sale of securities unless accompanied by a prospectus supplement for those securities.

Our common stock is listed on the Nasdaq Capital Market under the symbol “ARWR.” On August 5, 2011, the last reported sale price of our common stock on the Nasdaq Capital Market was \$0.51.

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 August 17, 2011

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or the SEC, utilizing a “shelf” registration process. Under this shelf registration process, we may offer from time to time any combination of the securities described in this prospectus for a total dollar amount not to exceed \$50,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with additional information described under the heading “Where You Can Find More Information.”

We have not authorized any dealer, salesperson or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or any accompanying prospectus supplement as if we had authorized it. This prospectus and any accompanying prospectus supplement do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor does this prospectus and any accompanying prospectus supplement constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and any accompanying prospectus supplement is correct on any date after their respective dates, even though this prospectus or any prospectus supplement is delivered or securities are sold on a later 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;

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- 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.

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 currently focused on the preclinical and clinical development of therapeutics for the treatment of cancer and obesity, as well as the regeneration of wounded or diseased tissue.

Arrowhead’s portfolio includes two majority owned subsidiaries, Calando Pharmaceuticals, Inc. (“Calando”), 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. (“Nanotope”), a regenerative medicine company and Leonardo Biosystems, Inc. (“Leonardo”), a multistage drug delivery company.

Our common stock is currently 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 5 and “Incorporation of Certain Information by Reference” on page 5.

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 under “Risk Factors” in the applicable prospectus supplement, together with all of the other information appearing in this prospectus or incorporated by reference into this prospectus and any applicable prospectus supplement, in light of your particular investment objectives and financial circumstances. 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.

USE OF PROCEEDS

Unless we provide otherwise in a supplement to this prospectus, we intend to use the net proceeds from the sale of our securities and from the exercise of the warrants issued pursuant hereto, if any, for general corporate purposes, which may include one or more of the following:

- working capital;
- research and clinical development activities;
- potential future acquisitions of companies and/or technologies; and
- capital expenditures.

Our management will have broad discretion in the allocation of the net proceeds of any offering. Pending such uses, we intend to invest the net proceeds in short-term, investment grade, interest-bearing securities.

THE SECURITIES WE MAY OFFER

We may offer shares of our common stock and/or warrants to purchase common stock with a total value of up to \$50,000,000 from time to time under this prospectus at prices and on terms to be determined by market conditions at the time of offering. Each time we offer a type or series of securities, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities.

PLAN OF DISTRIBUTION

We may sell our securities from time to time in any manner permitted by the Securities Act, including any one or more of the following ways:

- directly to investors;
- to investors through agents;
- to dealers; and/or
- through one or more underwriters.

Any underwritten offering may be on a best efforts or a firm commitment basis. We may also make direct sales through subscription rights distributed to our stockholders on a pro rata basis, which may or may not be transferable. In any distribution of subscription rights to stockholders, if all of the underlying securities are not subscribed for, we may then sell the unsubscribed securities directly to third parties or may engage the services of one or more underwriters, dealers or agents, including standby underwriters, to sell the unsubscribed securities to third parties. Under agreements into which we may enter, underwriters, dealers and agents who participate in the distribution of the securities may be entitled to indemnification by us against some liabilities, including liabilities under the Securities Act, or contribution from us for payments which the underwriters, dealers or agents may be required to make. Underwriters, dealers and agents may engage in transactions with us or perform services for us from time to time in the ordinary course of business.

The distribution of the securities may be effected from time to time in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices; or
- at negotiated prices.

Any of the prices may represent a discount from prevailing market prices.

We will seek authorization for listing and trading on the Nasdaq Capital Market for the shares of common stock sold pursuant to the registration statement of which this prospectus is a part and may seek to have any warrants

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we sell pursuant to this prospectus listed for trading on the Nasdaq Capital Market or another exchange. In any sale of the securities, underwriters or agents may receive compensation from us or from purchasers of the securities, for whom they may act as agents, in the form of discounts, concessions or commissions. Underwriters may sell the securities to or through dealers, and such dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agents. Underwriters, dealers and agents that participate in the distribution of the securities may be deemed to be underwriters under the Securities Act of 1933, and any discounts or commissions they receive from us and any profit on the resale of securities they realize may be deemed to be underwriting discounts and commissions under the Securities Act.

Each time we sell securities, we will describe the method of distribution of the securities in the prospectus supplement relating to such transaction. The applicable prospectus supplement will, where applicable:

- identify any such underwriter or agent;
- describe any compensation in the form of discounts, concessions, commissions or otherwise received from us by each such underwriter or agent and in the aggregate to all underwriters and agents;
- identify the amounts underwritten or to be sold through the agent; and
- identify the nature of the underwriter's or agent's obligation to take the securities.

If underwriters are utilized in the sale of the securities, the securities may be acquired by the underwriters for their own account and may be resold from time to time in one or more transactions, including negotiated transactions, at fixed public offering prices or at varying prices determined by the underwriters at the time of the sale. We may offer the securities to the public either through underwriting syndicates represented by managing underwriters or directly by the managing underwriters. If any underwriters are utilized in the sale of the securities, unless otherwise stated in the applicable prospectus supplement, the underwriting agreement will provide that the obligations of the underwriters are subject to specified conditions precedent and that the underwriters with respect to a sale of the securities will be obligated to purchase all of the securities offered if any are purchased.

Until the distribution of the securities is completed, rules of the Securities and Exchange Commission may limit the ability of any underwriters and selling group members to bid for and purchase the securities. As an exception to these rules, underwriters are permitted to engage in some transactions that stabilize the price of the securities, such as over allotment, stabilizing transactions, short covering transactions and penalty bids in accordance with Regulation M under the Securities Exchange Act of 1934, as amended. Over allotment involves sales in excess of the offering size which create a short position for the underwriter. Stabilizing transactions consist of bids or purchases for the purpose of pegging, fixing or maintaining the price of the securities. Short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. The underwriters may also impose a penalty bid, under which selling concessions allowed to syndicate members or other broker-dealers for securities sold in the offering for their account may be reclaimed by the syndicate if the securities are repurchased by the syndicate in stabilizing or covering transactions. In general, purchases of a security for the purpose of stabilization or to reduce a short position could cause the price of the security to be higher than it might be in the absence of such purchases. The imposition of a penalty bid might also have an effect on the price of a security to the extent that it were to discourage resales of the security before the distribution is completed.

We do not make any representation or prediction as to the direction or magnitude of any effect that the transactions described above might have on the price of the securities. In addition, we do not make any representation that underwriters will engage in such transactions or that such transactions, once commenced, will not be discontinued without notice.

Underwriters, dealers and agents may engage in transactions with us or perform services for us in the ordinary course of business.

If indicated in the applicable prospectus supplement, we will authorize underwriters or other persons acting as our agents to solicit offers by particular institutions to purchase securities from us at the public offering price set forth in such prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on the date or dates stated in such prospectus supplement. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the applicable prospectus supplement.

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To comply with applicable state securities laws, the securities offered by this prospectus will be sold, if necessary, in such jurisdictions only through registered or licensed brokers or dealers. In addition, securities may not be sold in some states unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

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, 2010, 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>.

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 0-15006. 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, 2010, filed on December 22, 2010;
- The Company's Quarterly Reports on Form 10-Q for the fiscal quarter ended December 31, 2010, filed on February 10, 2011, for the fiscal quarter ended March 31, 2011, filed on May 12, 2011 and for the fiscal quarter ended June 20, 2011, filed on August 8, 2011;
- The Company's Definitive Proxy Statement on Schedule 14-A, filed on June 27, 2011;
- The Company's Current Reports on Form 8-K filed on November 30, 2010, December 9, 2010, December 14, 2010, December 20, 2010, January 14, 2011, January 21, 2011, January 24, 2011, February 3, 2011, April 5, 2011, May 12, 2011 and June 9, 2011;
- The description of the Company's common stock contained in its registration statement on Form 8-A/A

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(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.

ARROWHEAD RESEARCH CORPORATION

PROSPECTUS

August 17, 2011
