

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

Amendment No. 1
to
FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ARROWHEAD 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)

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 this Registration Statement becomes effective, as determined by the Selling Stockholders.

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

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

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

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

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

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

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

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

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

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

Subject to Completion, dated January 26, 2012

Prospectus

Arrowhead Research Corporation

3,000,000 shares of Common Stock

This prospectus relates to the sale of up to 3,000,000 shares of our common stock which may be offered by the selling stockholder, Lincoln Park Capital Fund, LLC, or (“LPC”). The shares of common stock being offered by the selling stockholder are issuable pursuant to the Purchase Agreement between the Company and LPC dated October 20, 2011 (the “Purchase Agreement”). Please refer to the section of this prospectus entitled “The LPC Transaction” for a description of the Purchase Agreement and the section entitled “Selling Stockholder” for additional information. The prices at which LPC may sell the shares may be determined by the prevailing market price for the shares or in negotiated transactions. We will not receive proceeds from the sale of our shares by LPC.

The Company’s common stock is traded on the Nasdaq Capital Market under the symbol “ARWR”.

On January 24, 2012, the last reported sale price for our common stock as reported on the NASDAQ Capital Market was \$5.27 per share. We have applied to have the shares of common stock offered pursuant to this prospectus approved for listing on the NASDAQ Capital Market.

The selling stockholder is an “underwriter” within the meaning of the Securities Act of 1933, as amended.

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 4 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 _____, 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 10. 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 clinical stage nanomedicine company developing innovative therapies at the interface of biology and nanoengineering. Arrowhead’s world-class capabilities and intellectual property covering nucleic acid delivery, siRNA chemistry, and tissue targeting allow it to design and develop therapeutic agents for a wide range of diseases. The company’s lead products include CALAA-01, an oncology drug candidate based on the gene silencing RNA interference (RNAi) mechanism, and Adipotide™, an anti-obesity peptide that targets and kills the blood vessels that feed white adipose tissue. Arrowhead is leveraging its proprietary Dynamic PolyConjugate (DPC)™, Liposomal Nanoparticle (LNP), and RONDEL™ delivery platforms to support its own pipeline of preclinical and clinical candidates and to secure external partnerships and collaborations with biotech and pharmaceutical companies.

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 into this prospectus. See “Where You Can Find More Information” on page 10 and “Incorporation of Certain Information by Reference” on page 10.

THE OFFERING

On October 20, 2011, we executed a Purchase Agreement and a Registration Rights Agreement with Lincoln Park Capital Fund, LLC. Under the Purchase Agreement, we have the right to sell to LPC up to \$15,000,000 of our common stock at our discretion as described below.

Pursuant to the Registration Rights Agreement, we are filing this registration statement and prospectus with the Securities and Exchange Commission (the “SEC”) covering shares that have been issued or may be issued to LPC under the Purchase Agreement. We do not have the right to commence sales of our shares to LPC until four business days following the satisfaction of certain conditions set forth in the Purchase Agreement (the “Commencement Date”), including that the SEC has declared effective the registration statement of which this Prospectus is a part. During the approximately 36 months after the Commencement Date, we have the right to direct LPC to purchase up to \$15,000,000 of our common stock in amounts up to \$500,000 of our common stock as often as every four (4) business days, subject to certain conditions. Under certain circumstances we can increase the amount to be purchased to up to \$1,000,000 of our common stock. No sales of shares may occur at a price below \$2.00 per share. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to LPC. The purchase price of the shares will be based on the market prices of our shares immediately preceding the time of sale as computed under the Purchase Agreement without any fixed discount. We may at any time in our sole discretion terminate the Purchase Agreement without fee, penalty or cost upon one business day notice. As payment to LPC of the \$269,500 commitment fee pursuant to the Purchase Agreement, we issued 68,925 shares of our common stock to LPC at \$3.91 per share. We may issue up to an additional 88,618 shares pro rata as a further \$346,500 commitment fee as LPC purchases up to \$15,000,000 of our stock pursuant to the Purchase Agreement. LPC may not assign or transfer its rights and obligations under the Purchase Agreement.

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As of January 24, 2011, we had 10,530,524 shares of common stock outstanding (10,443,147 shares held by non-affiliates) including 68,925 shares which we have already issued to LPC and are offered by LPC pursuant to this Prospectus. 3,000,000 shares are offered hereby consisting of 68,925 shares that we issued to LPC as an initial commitment fee, 88,618 shares that we may issue pro rata as up to \$15,000,000 of our common stock is purchased by LPC and the remainder representing shares we may sell to LPC under the Purchase Agreement. If all of the 3,000,000 shares offered by LPC hereby were issued and outstanding as of the date hereof, such shares would represent 21.7% of the total common stock outstanding or 21.9% of the shares outstanding held by non-affiliates, as of the date hereof. If we elect to issue to LPC more than the 3,000,000 shares offered under this prospectus, which we have the right but not the obligation to do, we must first register under the Securities Act any such additional shares before selling such additional shares to LPC, which could cause substantial dilution to our shareholders. Before we begin selling shares to LPC pursuant to the Purchase Agreement, we are required to seek shareholder approval to maintain compliance with the NASDAQ Capital Market rules. The number of shares ultimately offered for sale by LPC is dependent upon the number of shares purchased by LPC under the Purchase Agreement.

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 herein and 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 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.

Our facility with Lincoln Park Capital Fund, LLP may not be sufficient to satisfy our capital requirements.

We may direct LPC to purchase up to \$15,000,000 of our common stock under our agreement over a thirty (36) month period generally in amounts of up to \$500,000 of our common stock every four business days, which amounts may be increased under certain circumstances. However, LPC shall not have the right nor the obligation to purchase any shares of our common stock on any business day that the market price of our common stock is less than \$2.00. Assuming a purchase price of \$5.27 per share (the closing sale price of our common stock on January 24, 2012) and the purchase by LPC of the full 3,000,000 purchase shares, proceeds to us would be approximately \$15 million.

The extent to which we rely on LPC as a source of funding will depend on a number of factors including, the prevailing market price of our common stock and the extent to which we are able to secure working capital from other sources. Specifically, LPC shall not have the right nor the obligation to purchase any shares of our common stock on any business days that the market price of our common stock is less than \$2.00. If sufficient funding from LPC were to prove unavailable or prohibitively dilutive, we will need to secure another source of funding in order to satisfy our working capital needs. Even if we sell all \$15,000,000 under the Purchase Agreement to LPC, we may still need additional capital to fully implement our business, operating and development plans. The inability to raise additional capital necessary to implement our business, operating and development plans on acceptable terms could cause a material adverse effect on our business, operating results, financial condition and prospects.

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The sale of our common stock to LPC may cause dilution and the sale of the shares of common stock acquired by LPC could cause the price of our common stock to decline.

In connection with entering into the Purchase Agreement, our board of directors authorized the sale to LPC of up to an aggregate of \$15,000,000 of our common stock exclusive of the 68,925 commitment shares issued and the 88,618 commitment shares that may be issued. The number of shares ultimately offered for sale by LPC under this prospectus is dependent upon the number of shares purchased by LPC under the Purchase Agreement. The purchase price for the common stock sold to LPC pursuant to the Purchase Agreement will fluctuate based on the trading price of our common stock. All 3,000,000 shares registered in this offering are expected to be freely tradable. It is anticipated that shares registered in this offering will be sold over a period of up to 36 months from the date of this prospectus. Depending upon market liquidity at the time, a sale of shares pursuant to this offering could cause the trading price of our common stock to decline. We can elect to direct purchases in our sole discretion but no sales may occur if the trading price of our common stock is below \$2.00 and therefore, LPC may ultimately purchase all, some or none of the 3,000,000 shares of common stock not yet issued but registered in this offering. After LPC has acquired such shares, it may sell all, some or none of such shares. Therefore, sales to LPC by us under the Purchase Agreement may result in substantial dilution to the interests of other holders of our common stock. The sale of a substantial number of shares of our common stock pursuant to this offering, or anticipation of such sales, could make it more difficult for us to sell equity or equity-related securities in the future at a time and at a price favorable to us. However, we have the right to control the timing and amount of any sales of our shares to LPC and the Purchase Agreement may be terminated by us at any time at our discretion without any cost to us.

USE OF PROCEEDS

This prospectus relates to shares of our common stock that may be offered and sold from time to time by the selling stockholder. We will receive no proceeds from the sale of shares of common stock in this offering. However, we may receive proceeds of up to \$15,000,000 under the Purchase Agreement. We will have broad discretion over the use of any proceeds we receive from LPC under the Purchase Agreement. We intend to use any such proceeds 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.

THE LPC TRANSACTION

General

On October 20, 2011, we executed a Purchase Agreement and a Registration Rights Agreement with Lincoln Park Capital Fund, LLC. Under the Purchase Agreement, we have the right to sell to LPC up to \$15,000,000 of our common stock at our discretion as described below.

Pursuant to the Registration Rights Agreement, we are filing this registration statement and prospectus with the Securities and Exchange Commission (the "SEC") covering shares that have been issued or may be issued to LPC under the Purchase Agreement. We do not have the right to commence sales of our shares to LPC until four business days following the satisfaction of certain conditions set forth in the Purchase Agreement (the "Commencement Date"), including that the SEC has declared effective the registration statement of which this Prospectus is a part. During the approximately 36 months after the Commencement Date, we have the right to direct LPC to purchase up to \$15,000,000 of our common stock in amounts up to \$500,000 of our common stock as often as every four (4) business days, subject to certain conditions. Under certain circumstances we can increase the amount to be purchased to up to \$1,000,000 of our common stock. No sales of shares may occur at a price below \$2.00 per share. There are no trading volume requirements or restrictions under the Purchase Agreement, and we will control the timing and amount of any sales of our common stock to LPC. The purchase price of the shares will be based on the market prices of our shares immediately preceding the time of sale as computed under the Purchase Agreement without any fixed discount. We may at any time in our sole discretion terminate the Purchase

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Agreement without fee, penalty or cost upon one business day notice. As payment to LPC of the \$269,500 commitment fee pursuant to the Purchase Agreement, we issued 68,925 shares of our common stock to LPC at \$3.91 per share. We may issue up to an additional 88,618 shares pro rata as a further \$346,500 commitment fee as LPC purchases up to \$15,000,000 of our stock pursuant to the Purchase Agreement. LPC may not assign or transfer its rights and obligations under the Purchase Agreement.

As of January 24, 2012, we had 10,530,524 shares of common stock outstanding (10,443,147 shares held by non-affiliates) including 68,925 shares which we have already issued to LPC and are offered by LPC pursuant to this Prospectus. 3,000,000 shares are offered hereby consisting of 68,925 shares that we issued to LPC as an initial commitment fee, 88,618 shares that we may issue pro rata as up to \$15,000,000 of our common stock is purchased by LPC and the remainder representing shares we may sell to LPC under the Purchase Agreement. If all of the 3,000,000 shares offered by LPC hereby were issued and outstanding as of the date hereof, such shares would represent 21.7% of the total common stock outstanding or 21.9% of the shares outstanding held by non-affiliates, as of the date hereof. If we elect to issue to LPC more than the 3,000,000 shares offered under this prospectus, which we have the right but not the obligation to do, we must first register under the Securities Act any such additional shares before selling such additional shares to LPC, which could cause substantial dilution to our shareholders. Before we begin selling shares to LPC pursuant to the Purchase Agreement, we are required to seek shareholder approval to maintain compliance with the NASDAQ Capital Market rules. The number of shares ultimately offered for sale by LPC is dependent upon the number of shares purchased by LPC under the Purchase Agreement.

Purchase Of Shares Under The Purchase Agreement

Under the Purchase Agreement, on any business day selected by us and as often as every four (4) business days, we may direct LPC to purchase up to \$500,000 of our common stock. The purchase price per share is equal to the lesser of:

- the lowest sale price of our common stock on the purchase date; or
- the average of the three (3) lowest closing sale prices of our common stock during the twelve (12) consecutive business days prior to the purchase.

The purchase price will be equitably adjusted for any reorganization, recapitalization, non-cash dividend, stock split, or other similar transaction occurring during the business days used to compute the purchase price.

In addition to purchases of up to \$500,000 of common stock, we may direct LPC as often as every four (4) business days to purchase up to \$600,000 of our common stock provided on the purchase date our share price is not below \$9.00 per share. We may increase this amount up to \$800,000 of our common stock provided on the purchase date our share price is not below \$12.00 per share. We may increase this amount up to \$1,000,000 of our common stock provided on the purchase date our share price is not below \$15.00 per share.

Minimum Purchase Price

Under the Purchase Agreement, we have set a minimum purchase price ("floor price") of \$2.00. LPC shall not have the right nor the obligation to purchase any shares of our common stock in the event that the purchase price would be less than the floor price.

Events of Default

The following events constitute events of default under the Purchase Agreement:

- the effectiveness of the registration statement of which this prospectus is a part of lapses for any reason (including, without limitation, the issuance of a stop order) or is unavailable to LPC for sale of our common stock offered hereby and such lapse or unavailability continues for a period of ten (10) consecutive business days or for more than an aggregate of thirty (30) business days in any 365-day period;
- suspension by our principal market of our common stock from trading for a period of three (3) consecutive business days;

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- the de-listing of our common stock from our principal market provided our common stock is not immediately thereafter listed or quoted, as applicable, on the Nasdaq Capital Market, the OTC Bulletin Board including comparable markets, the Nasdaq Global Select Market, the NYSE AMEX, or the New York Stock Exchange;
- the transfer agent's failure for five (5) business days to issue to LPC shares of our common stock which LPC is entitled to under the Purchase Agreement;
- any material breach of the representations, warranties or covenants contained in the Purchase Agreement or any related agreements which has or which could have a material adverse effect on us subject to a cure period of five (5) business days;
- any participation or threatened participation in insolvency or bankruptcy proceedings by or against us; or
- the Company is unable to effect sales pursuant to the Purchase Agreement without violating the applicable rules of the Nasdaq Stock Market or any other principal market on which the Company's common stock is listed or quoted.

Our Termination Rights

We have the unconditional right to terminate the Purchase Agreement at any time for any reason or no reason by giving notice to LPC; provided that after the Commencement Date such termination shall not become effective until one day after it is delivered. There are no termination fees payable by us.

No Short-Selling or Hedging by LPC

LPC has agreed that during the term of the Purchase Agreement neither it nor any of its affiliates shall engage in any direct or indirect short-selling or hedging transaction of our common stock that establishes a net short position.

Effect of Performance of the Purchase Agreement on Our Stockholders

All 3,000,000 shares registered in this offering are expected to be freely tradable. It is anticipated that shares registered in this offering will be sold, if at all, over a period of up to 36 months from the date of this prospectus. The sale by LPC of a significant amount of shares registered in this offering at any given time could cause the market price of our common stock to decline and to be highly volatile. LPC may ultimately purchase all, some or none of the 2,931,075 shares of common stock that are registered in this offering but not yet held by LPC. After it has acquired such shares, it may sell all, some or none of such shares. Therefore, sales to LPC by us under the Purchase Agreement may result in substantial dilution to the interests of other holders of our common stock. However, we have the right to control the timing and amount of any sales of our shares to LPC and the agreement may be terminated by us at any time at our discretion without any cost to us.

In connection with entering into the agreement, our board of directors authorized the sale to LPC of up to an aggregate of \$15,000,000 of our common stock exclusive of the 68,925 commitment shares issued and the 88,618 commitment shares that may be issued. We have the right to terminate the agreement without any payment or liability to LPC at any time, including in the event that all \$15,000,000 is sold to LPC under the Purchase Agreement. The number of shares ultimately offered for sale by LPC under this prospectus is dependent upon the number of shares purchased by LPC under the agreement. The following table sets forth the proceeds we would receive from LPC for the sale of shares pursuant to the Purchase Agreement and the number of shares that would subsequently be available for sale by LPC pursuant to this offering:

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Assumed Average Purchase Price	Number of Shares Issued to LPC if Full Purchase (1) (2)	Percentage of Outstanding Shares After Giving Effect to the Issuance to LPC (3)	Proceeds from the Sale of Shares to LPC Under the LPC Purchase Agreement
\$2.00 (4)	3,000,000	22.2%	\$5,929,106
\$5.27 (5)	2,934,918	21.8%	\$15,000,000
\$7.50	2,088,618	16.0%	\$15,000,000
\$10.00	1,588,618	12.5%	\$15,000,000
\$15.00	1,088,618	8.7%	\$15,000,000

- Although the Purchase Agreement provides that we may sell up to \$15,000,000 of our common stock to LPC, we are only registering 3,000,000 shares, which may or may not cover the shares purchased by LPC and the initial and additional commitment shares, depending on the purchase price per share. As a result, we have only included in this column up to the number of shares that are registered in this offering.
- The number of shares to be issued to LPC and available for sale by LPC pursuant to this offering includes the number of shares to be purchased at the applicable price plus the additional commitment shares (but not the initial commitment shares). The Company will receive no proceeds from the issuance of the additional commitment shares.
- The denominator is based on the sum of i) 10,530,524 shares outstanding as of January 24, 2012, which includes the 68,925 initial commitment shares already issued to LPC, which are part of this offering, plus ii) the number of shares set forth in the second column, which includes the additional commitment shares issued pro rata as up to \$15,000,000 of our common stock is purchased by LPC. The numerator is based on the number of shares issuable under the Purchase Agreement at the corresponding assumed purchase price set forth in the first column. The number of shares in the second column does not include shares that may be issued to LPC that exceed the 3,000,000 shares that are a part of this offering.
- Under the Purchase Agreement, we may not sell and LPC may not purchase any shares in the event the purchase price of such shares is below \$2.00.
- The closing sale price of our shares on January 24, 2012.

SELLING STOCKHOLDER

The following table presents information regarding the selling stockholder. Neither the selling stockholder nor any of its affiliates has held a position or office, or had any other material relationship, with us.

Selling Stockholder	Shares Beneficially Owned Before Offering	Percentage of Outstanding Shares Beneficially Owned Before Offering	Shares to be Sold in the Offering Assuming The Company Issues The Maximum Number of Shares Under the Purchase Agreement	Number of Shares Beneficially Owned After Offering (3)	Percentage of Outstanding Shares Beneficially Owned After Offering
Lincoln Park Capital Fund, LLC (1)	168,925(2)	1.6%(2)	3,000,000	100,000	*

*less than 1%

- Josh Scheinfeld and Jonathan Cope, the principals of LPC, are deemed to be beneficial owners of all of the shares of common stock owned by LPC. Messrs. Scheinfeld and Cope have shared voting and disposition power over the shares being offered under this Prospectus.
- Includes 68,925 shares of our common stock previously issued to LPC under the Purchase Agreement as an initial commitment fee and 100,000 shares LPC acquired in a sale of stock that is not a part of this offering. We may at our discretion elect to issue to LPC up to an additional 2,931,075 shares of our common stock in this offering under the Purchase Agreement, which are included in this offering. Such shares are not included in determining the percentage of shares beneficially owned before the offering.

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- (3) We have no assurance that the selling stockholder will sell any of the common stock being registered for sale. For purposes of this table, we have assumed that the selling stockholder will have sold all of the shares covered by this prospectus upon completion of the offering, including such shares issuable upon the delivery of purchase notices pursuant to the terms of the Purchase Agreement. Additionally, we have assumed that the selling stockholder does not acquire, pursuant to the Purchase Agreement or otherwise, more than the 3,000,000 shares included in this offering.

PLAN OF DISTRIBUTION

The common stock offered by this prospectus is being offered by Lincoln Park Capital Fund, LLC, the selling stockholder. The common stock may be sold or distributed from time to time by the selling stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the common stock offered by this Prospectus may be effected in one or more of the following methods:

- ordinary brokers' transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents
- "at the market" into an existing market for the common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the registration or qualification requirement is available and complied with.

Brokers, dealers, underwriters, or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the selling stockholder and/or purchasers of the common stock for whom the broker-dealers may act as agent. The compensation paid to a particular broker-dealer may be less than or in excess of customary commissions.

LPC is an "underwriter" within the meaning of the Securities Act.

Neither we nor LPC can presently estimate the amount of compensation that any agent will receive. We know of no existing arrangements between LPC, any other shareholder, broker, dealer, underwriter, or agent relating to the sale or distribution of the shares offered by this Prospectus. At the time a particular offer of shares is made, a prospectus supplement, if required, will be distributed that will set forth the names of any agents, underwriters, or dealers and any compensation from the selling stockholder, and any other required information.

We will pay all of the expenses incident to the registration, offering, and sale of the shares to the public other than commissions or discounts of underwriters, broker-dealers, or agents. We have also agreed to indemnify LPC and related persons against specified liabilities, including liabilities under the Securities Act.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been advised that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore, unenforceable.

LPC and its affiliates have agreed not to engage in any direct or indirect short selling or hedging of our common stock during the term of the Purchase Agreement.

We have advised LPC that while it is engaged in a distribution of the shares included in this Prospectus it is required to comply with Regulation M promulgated under the Securities Exchange Act of 1934, as amended. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer

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or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the shares offered hereby this Prospectus.

This offering will terminate on the date that all shares offered by this Prospectus have been sold by LPC.

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;

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- 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.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

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

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

Registration Fee—Securities and Exchange Commission	\$ 1,643.36
Accountants Fees and Expenses	\$ 10,000
Legal Fees and Expenses	\$ 10,000
Miscellaneous	\$ 10,000
Total	<u>\$31,643.36</u>

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

Item 15. Indemnification of Directors and Officers.

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

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

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

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Item 16. Exhibit Index.

<u>Exhibit No.</u>	<u>Description</u>
4.1	Form of Common Stock Certificate (1)
5.1	Opinion of Ropes & Gray LLP (2)
23.1	Consent of Rose, Snyder & Jacobs, the registrant's independent registered public accounting firm**
23.2	Consent of Ropes & Gray LLP (included in legal opinion filed as Exhibit 5.1) (2)
24.1	Power of Attorney (included on signature page) (2)

** Filed herewith.

- (1) Incorporated by reference from Amendment No. 2 to the Registration Statement on Form S-1, filed by the registrant on September 11, 2009.
- (2) Incorporated by reference from the Registration Statement on Form S-3 (File No 333-178532), filed by the Registrant on December 15, 2011.

Item 17. Undertakings.

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

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, That:

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

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

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- (A) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in this registration statement; and
 - (B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however*, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of this Registration Statement or made in any such document immediately prior to such effective date.
- (5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities: The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

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

Item 512(h) of Regulation S-K. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act, and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or

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paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference, in this Registration Statement on Amendment No. 1 to Form S-3 of our report dated December 20, 2011, with respect to the consolidated financial statements of Arrowhead Research Corporation and Subsidiaries appearing in the Company's Annual Report on Form 10-K for the year ended September 30, 2011, and to the reference of our Firm under the caption "Experts" in the Registration Statement.

/s/ Rose, Snyder & Jacobs

Rose, Snyder & Jacobs

A Corporation of Certified Public Accountants

Encino, California

January 24, 2012