

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549**

**FORM S-3
REGISTRATION STATEMENT
UNDER THE
SECURITIES ACT OF 1933**

ARROWHEAD RESEARCH CORPORATION

(Name of small business issuer in its charter)

Delaware
(State of incorporation)

46-0408024
(I.R.S. Employer Identification No.)

**201 South Lake Avenue, Suite 703
Pasadena, California 91101
(626) 304-3400**
(Address, including zip code, and telephone number,
including area code, of Registrant's principal executive offices)

R. Bruce Stewart, Chief Executive Officer
ARROWHEAD RESEARCH CORPORATION
201 South Lake Avenue, Suite 703
Pasadena, California 91101
(626) 304-3400
(Name and address of agent for service)

Copies of communications sent to:
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(310) 907-1000

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of the Registration Statement, as determined by the Registrant.

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

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

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

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

If delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box.

CALCULATION OF REGISTRATION FEE

| Title of Securities to be Registered | Amount to be Registered ⁽¹⁾ | Proposed Maximum Offering Price Per Share ⁽²⁾ | Proposed Maximum Aggregate Offering Price ⁽²⁾ | Amount of Registration Fee |
|------------------------------------------|----------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------|
| Common Stock, par value \$.001 per share | 438,664 | \$ 4.795 | \$ 2,103,393.88 | \$ 225.06 |

(1) Pursuant to Rule 416 of the Securities Act of 1933, as amended, this Registration Statement also covers such additional securities as may become issuable to prevent dilution resulting from stock splits, stock dividends and similar events.

(1) Pursuant to Rule 457(c), calculated on the basis of the average of the high and low prices per share of the Registrant's Common Stock reported on the NASDAQ Capital Market on September 13, 2006.

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 or until this registration statement shall become effective on such date as the 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.

PROSPECTUS (Subject to Completion)
dated September ____, 2006

ARROWHEAD RESEARCH CORPORATION

438,664 shares of Common Stock

This prospectus covers the sale of an aggregate of 438,664 shares of the Common Stock, \$.001 par value (the "Common Stock") of Arrowhead Research Corporation, a Delaware corporation (the "Company"), by the selling security holders identified in this prospectus, (collectively with any holder's transferee, pledgee, donee or successor, the "Selling Stockholders"). The Common Stock covered by this prospectus consists of shares offered in private placements as follows: (i) 204,918 shares of Common Stock (the "Private Placement Shares") sold to certain Selling Stockholders for cash (the "Private Placement"), (ii) 208,382 shares of Common Stock (the "Calando Shares") issued to certain of the Selling Stockholders pursuant to a Common Stock Transfer Agreement (the "Calando Purchase") and (iii) 25,364 shares of Common Stock issued to the California Institute of Technology as repayment for certain patent costs and expenses incurred on Insert Therapeutics, Inc.'s behalf. The shares identified in clauses (i), (ii) and (iii), the "Shares."

The Company will not receive any proceeds from the sale by the Selling Stockholders of the Common Stock.

The Company's Common Stock is traded on The NASDAQ Capital Market and under the symbol "ARWR." On September 13, 2006, the closing sale price of our Common Stock on The NASDAQ Capital Market was \$4.74 per share. Our principal executive offices are located at 201 South Lake Avenue, Suite 703, Pasadena, California 91101, and our telephone number is (626) 304-3400.

Investing in our securities involves risks. You should carefully consider the [risk factors](#) beginning on page 1 of this prospectus before you make an investment in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved 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 September 14, 2006

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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 More 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 and the documents incorporated by reference into it contain forward-looking statements that involve risks and uncertainties. The Company has made these statements in reliance on the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. The Company’s forward-looking statements relate to future events or our future performance and include, but are not limited to, statements concerning our business strategy, future research and development projects, potential commercial revenues, capital requirements, new potential product introductions, expansion plans and the Company’s funding requirements. Other statements contained in our filings that are not historical facts are also forward-looking statements. The Company has tried, wherever possible, to identify forward-looking statements by terminology such as “may,” “will,” “could,” “should,” “expects,” “anticipates,” “intends,” “plans,” “believes,” “seeks,” “estimates” and other comparable terminology.

Forward-looking statements are not guarantees of future performance and are subject to various risks, uncertainties and assumptions that are difficult to predict. Actual results may differ materially from those anticipated in these forward-looking statements as a result of a number of factors, including the risk factors described below in this prospectus and in our periodic filings with the SEC, incorporated by reference or included in this prospectus. All forward-looking statements contained in this prospectus are made only as of the date on the prospectus cover. We are under no obligation—and we expressly disclaim any such obligation—to update or alter our forward-looking statements, whether as a result of new information, future events or otherwise. Before deciding to buy or sell our securities, you should be aware that the occurrence of the events described in these risk factors could harm our business, operating results and financial condition, which consequences could materially diminish the trading price of our securities and/or their value.

SUMMARY

Unless otherwise noted, (1) the term "Arrowhead Research" refers to Arrowhead Research Corporation, a Delaware corporation and 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, (3) the term "ARC" refers to Arrowhead Research Corporation, a privately-held California corporation with which Arrowhead Research consummated a stock exchange transaction in January 2004, and (4) the term "Common Stock" refers to 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 development stage nanotechnology company commercializing new technologies in the areas of life sciences, electronics, and energy. Arrowhead is building value for stockholders through the progress of majority owned subsidiaries founded on nanotechnologies originally developed at universities. The Company works closely with universities to source early stage deals and to generate rights to intellectual property covering promising new nanotechnologies. Currently, Arrowhead has four subsidiaries commercializing nanotech products and applications, including anti-cancer drugs, RNAi therapeutics, carbon-based electronics and compound semiconductor materials.

The Company was originally incorporated in South Dakota in 1989, and was reincorporated in Delaware in 2000. Arrowhead Research consummated a stock exchange transaction on January 12, 2004 with the owners of ARC, referred to as the "Stock Exchange." In the Stock Exchange, the owners of ARC acquired approximately 89% of the Common Stock of the Company, and ARC became a wholly owned subsidiary of the Company. The Company's principal executive offices are located at 201 South Lake Avenue, Suite 703, Pasadena, California 91101, and its telephone number is (626) 304-3400.

RISK FACTORS

We are a development stage company and we have limited historical operations. We urge you to consider our likelihood of success and prospects in light of the risks, expenses and difficulties frequently encountered by entities at our current stage of development.

CERTAIN RISK FACTORS RELATING TO THE COMPANY'S FOCUS ON NANOTECHNOLOGY

There are substantial risks inherent in attempting to commercialize new technological applications, and, as a result, we may not be able to successfully develop nanotechnology for commercial use.

The Company finances research and development of nanotechnology, which is new and unproven. The Company's investigative scientists are at various stages of developing technology and such technology's commercial feasibility and acceptance is unknown. Scientific research and development requires significant financing and has a lengthy lifecycle. To date, the Company's research and development projects have not produced commercially viable applications, and may never do so. During our research and development process, the Company may experience technological issues that it may be unable to overcome. For example, our scientists must determine how to design and develop nanotechnology applications for potential products designed by third parties for use in cost-effective manufacturing processes. Because of these uncertainties, none of our potential applications may be successfully developed. If the Company is unable to successfully develop nanotechnology applications for commercial use, we will be unable to generate revenue or build a sustainable or profitable business.

We will need to achieve commercial acceptance of our applications to obtain revenue and achieve profitability.

Even if our research and development yields technologically feasible applications, the Company may not successfully develop commercial products on a timely basis, if at all. If the Company's research efforts are successful, it could be at least several years before our technology will be commercially viable, and, during this period, superior competitive technologies may be introduced or customer needs may change diminishing or extinguishing the commercial uses for our applications. To date, the broad markets have generally not adopted nanotechnology-enabled products. The Company cannot predict when broad-market acceptance for nanotechnology-

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enabled products will develop, if at all, and we cannot reliably estimate the projected size of any market that may develop. If markets fail to accept nanotechnology-enabled products, we may not be able to achieve revenue from the commercial application of our technologies. Our revenue growth and achievement of profitability will depend substantially on our ability to introduce new technological applications to manufacturers for products accepted by customers. If we are unable to cost-effectively achieve OEM acceptance of our technology, or if the associated products do not achieve wide market acceptance, our business will be materially and adversely affected.

The Company may not be able to compete effectively in securing first-tier research and development projects when competing against existing or new ventures.

Management believes that the Company's success to date in raising capital to finance nanotechnology research and commercialization projects is attributable, in large part, to the belief that the plan of operations adopted by the Company is relatively novel. If the Company continues to be successful in attracting funding for research and commercialization projects, it is possible that additional competitors could emerge and compete for financing. Should that occur, the Company could encounter difficulty in raising funds to finance its future operations and further research and commercialization projects.

Additionally, there are some companies that already fund early-stage, scientific research at universities, and some venture capital funds invest in companies seeking to commercialize technology. It is possible that these established companies and venture funds, as well as possible additional competitors, have or will emerge to finance nanotechnology research. Should that occur, the Company could encounter difficulty in obtaining the opportunity to finance first-tier research and commercialization projects. Furthermore, should any commercial undertaking by the Company, with respect to a particular product or technology, prove to be successful, there can be no assurance those competitors with greater financial resources than the Company will not emerge to offer similar competitive, products and/or technologies.

Nanotechnology-enabled products are new and may be viewed as being harmful to human health or the environment.

There is increasing public concern about the environmental and ethical implications of nanotechnology that could impede market acceptance of products developed through these means. Potentially, nanotechnology-enabled products could be composed of materials such as carbon, silicon, silicon carbide, germanium, gallium arsenide, gallium nitride, cadmium selenide or indium phosphide, and nanotechnology-enabled products have no historical safety record. Because of the size, shape, or composition of the nanostructures or because they may contain harmful elements, nanotechnology-enabled products could pose a safety risk to human health or the environment. In addition, some countries have adopted regulations prohibiting or limiting the use of certain materials that contain certain chemicals, which may limit the market for nanotechnology-enabled products. U.S. government authorities could, for social or other purposes, prohibit or regulate the use of nanotechnology. The regulation and limitation of the kinds of materials used in or to develop nanotechnology-enabled products, or the regulation of the products themselves, could harm the commercialization of nanotechnology-enabled products and impair our ability to achieve revenue from the license of nanotechnology applications.

The Company will need approval from governmental authorities in the United States and other countries to successfully realize commercial value from the Company's activities.

In order to clinically test, manufacture, and market products for commercial use, two of the Company's current subsidiaries must satisfy mandatory procedures and safety and effectiveness standards established by various regulatory bodies, including the U.S. Food and Drug Administration (FDA). Technology and product development and approval within this regulatory framework takes a number of years and involves the expenditure of substantial resources. The time and expense required to perform the required testing can vary and is substantial. In addition, no action can be taken to market any biologic, drug or device in the United States until the FDA approves an appropriate marketing application. Furthermore, even after initial FDA approval has been obtained, further trials may be required to provide additional data on safety and effectiveness. Adverse events that are reported during regulatory trials or after marketing approval can result in additional limitations being placed on a product's use and, potentially, withdrawal of the product from the market. Any adverse event, either before or after approval, can result in product liability claims against the Company, which could significantly and adversely impact the value of our Common Stock.

If export controls affecting our products are expanded, our business will be adversely affected.

The U.S. government regulates the sale and shipment of numerous technologies by U.S. companies to foreign countries. Arrowhead's subsidiaries may develop products that might be useful for military and antiterrorism activities. Accordingly, U.S. government export regulations could restrict sales of these products in other countries. If the U.S. government places expanded export controls on our technology or products, our business would be materially and adversely affected. If the U.S. government determines that we have not complied with the applicable export regulations, we may face penalties in the form of fines or other punishment.

Our research and product development efforts pertaining to the pharmaceutical industry are subject to additional risks.

As of June 30, 2006, two of our Subsidiaries, Insert and Calando, were focused on research and development projects related to new and improved pharmaceutical conjugates. Drug development is time-consuming, expensive, and risky. Even product candidates that appear promising in the early phases of development, such as in early animal and human clinical trials, often fail to reach the market for a number of reasons, such as:

- clinical trial results are not acceptable, even though preclinical trial results were promising;
- inefficacy and/or harmful side effects in humans or animals;
- the necessary regulatory bodies, such as the FDA, did not approve our product candidate for an intended use; and
- manufacture and distribution is uneconomical;

Clinical trial results are frequently susceptible to varying interpretations by scientists, medical personnel, regulatory personnel, statisticians, and others, which often delays, limits, or prevents further clinical development or regulatory approvals of a product candidate. If Insert and Calando are unable to cost-effectively achieve acceptance of their respective biopharmaceutical technology, or if the associated drug products do not achieve wide market acceptance, the business of each of Insert and Calando will be materially and adversely affected, and the value of Company's interest in each Subsidiary will be diminished.

Our corporate compliance program cannot guarantee that we are in compliance with all potentially applicable federal and state regulations.

The Company's research and development, as well as its efforts related to commercialization, such as clinical trials, manufacturing and distribution, together with the Company's general operations, is subject to extensive federal and state regulation. While we have developed and instituted a corporate compliance program based on current best practices, we cannot assure you that the Company or its employees are or will be in compliance with all potentially applicable federal and state regulations or laws. If we fail to comply with any of these regulations or laws, a range of actions could result, including, but not limited to, the termination of clinical trials, the failure to approve a commercialized product, significant fines, sanctions, or litigation.

The Company's ability to protect its patents and other proprietary rights is uncertain, exposing it to the possible loss of competitive advantage.

The Company's Subsidiaries have licensed rights to pending patents and have filed and will continue to file patent applications. The researchers sponsored by the Company may also file patent applications that Arrowhead chooses to license. If a particular patent is not granted, the value of the invention described in the patent would be diminished. Further, even if these patents are granted, they may be difficult to enforce. Even if successful, efforts to enforce our patent rights could be expensive, distracting for management, cause our patents to be invalidated, and frustrate commercialization of products. Additionally, even if patents are issued, and are enforceable, others may independently develop similar, superior, or parallel technologies to any technology developed by us, or the Company's technology may prove to infringe upon patents or rights owned by others. Thus, the patents held by or licensed to us may not afford us any meaningful competitive advantage. If we are unable to derive value from our licensed or owned intellectual property, the value of your investment in the Company may decline.

CERTAIN RISK FACTORS RELATING TO THE EARLY STAGE OF THE COMPANY'S BUSINESS

We are a development stage company and the Company's success is subject to the substantial risks inherent in the establishment of a new business venture.

As a consequence of the change in the control of the Company on January 12, 2004, the Company changed management and all efforts that were previously initiated by prior management were abandoned. At that time, the Company's new management adopted a new plan of operations based on the strategy that was formulated by the California corporation following its formation in May 2003 and not previously proven successful. To date, implementation of this strategy is still in the development stage. We have acquired majority interests in four Subsidiary companies and, are sponsoring one university research project at Caltech, one university research project at Duke University and one university research project at Stanford. In August 2006, the Company began sponsorship of research at Florida University. The Company's business and operations should be considered to be in the development stage and subject to all of the risks inherent in the establishment of a new business venture. Accordingly, the intended business and operations of the Company may not prove to be successful in the near future, if at all. Any future success that the Company might enjoy will depend upon many factors, many of which may be beyond the control of the Company, or which cannot be predicted at this time, and could have a material adverse effect upon the financial condition, business prospects and operations of the Company and the value of an investment in the Company.

The Company has not generated revenue and its business model does not predict significant revenues in the foreseeable future.

To date, the Company has only generated a small amount of revenue as a result of its current plan of operations. Moreover, given its strategy of financing new and unproven technology research, we do not expect to realize significant revenue from operations in the foreseeable future, if at all.

We must overcome the many obstacles associated with integrating and operating varying business ventures to succeed.

Arrowhead's model to integrate and oversee the strategic direction of various subsidiaries and research and development projects presents many risks, including:

- the difficulty of integrating operations and personnel; and
- the diversion of our management's attention as a result of evaluating, negotiating and integrating acquisitions or new business ventures.

If we are unable to timely and efficiently design and integrate administrative and operational support for our Subsidiaries, we may be unable to manage projects effectively, which could adversely affect our ability to meet our business objectives and the value of an investment in the Company could decline.

In addition, consummating acquisitions and taking advantage of strategic relationships could adversely impact our cash position, and dilute Stockholder interests, for many reasons, including:

- changes to our income to reflect the amortization of acquired intangible assets, including goodwill;
- interest costs and debt service requirements for any debt incurred to fund our growth strategy; and
- any issuance of securities to fund our operations or growth, which dilutes or lessens the rights of current Stockholders.

The Company may need to raise additional capital in the near future, and, if we are unable to secure adequate funds on acceptable terms, the Company may be unable to support its business plan.

The Company's plan of operations is to provide substantial amounts of research project funding and financial support for majority-owned Subsidiaries over an extended period of time. Accordingly, the Company may

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need to raise additional capital in the near term, and may seek to do so by conducting one or more private placements of equity securities, selling additional securities in a registered public offering, or through a combination of one or more of such financing alternatives. There can be no assurance that any additional capital resources needed by the Company will be available to the Company as and when required, or on favorable terms that will be acceptable to the Company. If the Company is unable to raise the capital required on a timely basis, it may not be able to fund its research projects or the development of the businesses of its Subsidiaries. In such event, the Company may be required to delay or reduce implementation of certain aspects of its plan of operations.

Stockholder interest in the Company may be substantially diluted in additional financings by the Company.

Our Certificate of Incorporation authorizes the issuance of an aggregate of 70,000,000 shares of Common Stock, on such terms and at such prices as the Board of Directors of the Company may determine. As of September 14, 2006, 34,136,608 shares of common stock were outstanding. As of September 14, 2006, 1,742,500 shares and 5,000,000 shares were reserved for issuance upon exercise of options granted under Arrowhead's 2000 Stock Option Plan and 2004 Equity Incentive Plan, respectively. As of September 14, 2006, options to purchase 1,742,500 shares were outstanding under the 2000 Stock Option Plan and options to purchase 2,841,833 shares had been granted under the 2004 Incentive Plan. The Company has warrants outstanding to purchase 1,397,500 shares of Common Stock that are callable by the Company under certain market conditions. The issuance of additional securities would dilute the equity interests of the Company's existing Stockholders, perhaps substantially, and might result in dilution in the tangible net book value of a share of our Common Stock, depending upon the price and other terms on which the additional shares are issued.

The Company's success depends on the attraction and retention of senior management and scientists with relevant expertise.

The Company's future success will depend to a significant extent on the continued services of its key employees, particularly Mr. R. Bruce Stewart, Chief Executive Officer, who conceived of the Company's business and overall operating strategy and has been most instrumental in assisting the Company raise capital. On September 7, 2004, Mr. Joseph T. Kingsley joined the Company as its Chief Financial Officer and on June 2, 2006 was appointed Interim President. Mr. Kingsley also remains the Company's Chief Financial Officer. Mr. Kingsley is a key member of the Company's management team. The Company does not maintain key man life insurance for Mr. Stewart, Mr. Kingsley, or any other executive. The Company's ability to execute its strategy also will depend on its ability to continue to attract and retain qualified scientists, sales, marketing and additional managerial personnel. If we are unable to find, hire and retain qualified individuals, we could have difficulty implementing our business plan in a timely manner, or at all.

Our Board of Directors has the authority to issue shares of "blank check" Preferred Stock, which may make an acquisition of our company by another company more difficult.

We have adopted and may in the future adopt certain measures that may have the effect of delaying, deferring or preventing a takeover or other change in control of the Company that a holder of our Common Stock might consider in its best interest. Specifically, the Company's Board of Directors, without further action by the Company's stockholders, currently has the authority to issue up to 5,000,000 shares of preferred stock and to fix the rights (including voting rights), preferences and privileges of these shares ("blank check" preferred). Such preferred stock may have rights, including economic rights, senior to our Common Stock. As a result, the issuance of the preferred stock could have a material adverse effect on the price of our Common Stock and could make it more difficult for a third party to acquire a majority of our outstanding Common Stock.

CERTAIN RISK FACTORS RELATING TO OUR STOCK

Arrowhead's Common Stock price has fluctuated significantly during fiscal 2005 and 2006 and may continue to do so in the future.

Because we are a developmental stage company, there are few objective metrics by which our progress may be measured. Consequently, we expect that the market price of our Common Stock will likely continue to fluctuate significantly. We do not expect to generate substantial revenue from the license or sale of our nanotechnology for several years, if at all. In the absence of product revenue as a measure of our operating performance, we anticipate that investors and market analysts will assess our performance by considering factors such as:

- announcements of developments related to our business;

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- developments in our strategic relationships with scientists within the nanotechnology field;
- our ability to enter into or extend investigation phase, development phase, commercialization phase and other agreements with new and/or existing partners;
- announcements regarding the status of any or all of our collaborations or products;
- market perception and/or investor sentiment regarding nanotechnology as the next technological wave;
- announcements regarding developments in the nanotechnology field in general;
- the issuance of competitive patents or disallowance or loss of our patent rights; and
- quarterly variations in our operating results.

We will not have control over many of these factors but expect that they may influence our stock price. As a result, our stock price may be volatile and you may lose all or part of your investment.

The market for purchases and sales of the Company's Common Stock may be very limited, and the sale of a limited number of shares could cause the price to fall sharply.

Although the Company's Common Stock is listed for trading on The NASDAQ Capital Market, currently, our securities are very thinly traded. Accordingly, it may be difficult to sell shares of Common Stock quickly without significantly depressing the value of the stock. Unless we are successful in developing continued investor interest in our stock, sales of our stock could continue to result in major fluctuations in the price of the stock.

If securities or industry analysts do not publish research reports about our business, or if they make adverse recommendations regarding an investment in our stock, our stock price and trading volume may decline.

The trading market for our Common Stock will be influenced by the research and reports that industry or securities analysts publish about our business. We do not currently have and may never obtain research coverage by industry or securities analysts. If no industry or securities analysts commence coverage of our Company, the trading price of our stock could be negatively impacted. In the event we obtain industry or security analyst coverage, if one or more of the analysts downgrade our stock or comment negatively on our prospects, our stock price would likely decline. If one or more of these analysts cease to cover our industry or us or fails to publish reports about our Company regularly, our Common Stock could lose visibility in the financial markets, which could also cause our stock price or trading volume to decline.

The market price of our Common Stock may be adversely affected by the sale of shares by the Company's management or founding Stockholders.

Sales of our Common Stock by our officers, directors and founding Stockholders could adversely and unpredictably affect the price of those securities. Additionally, the price of Arrowhead's Common Stock could be affected even by the potential for sales by these persons. We cannot predict the effect that any future sales of our Common Stock or the potential for those sales, will have on our share price.

We may be the target of securities class action litigation due to future stock price volatility.

In the past, when the market price of a stock has been volatile, holders of that stock have often initiated securities class action litigation against the company that issued the stock. If any of our Stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. The lawsuit could also divert the time and attention of our management.

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We do not intend to declare cash dividends on our Common Stock.

We will not distribute cash to our stockholders until and unless we can develop sufficient funds from operations to meet our ongoing needs and implement our business plan. The time frame for that is inherently unpredictable, and you should not plan on it occurring in the near future, if at all.

USE OF PROCEEDS

The proceeds from the sale of the Common Stock under this prospectus are solely for the account of the Selling Stockholders. We will not directly receive any proceeds from the sale of shares under this prospectus.

SELLING SECURITY HOLDERS

The Company has included in this prospectus the following shares of Common Stock:

- 204,918 shares of Common Stock issued to certain of the Selling Stockholders for cash,
- 208,382 shares of Common Stock issued to certain of the Selling Stockholders pursuant to the Calando Purchase, and
- 25,364 shares of Common Stock issued to California Institute of Technology as repayment for certain patent costs and expenses incurred on Insert Therapeutics, Inc.'s behalf.

The following table sets forth the name of each Selling Stockholder, the number of shares of Common Stock owned by each Selling Stockholder as of the date of this prospectus, and the percentage of all outstanding shares of Common Stock that such shares represent, together with the number of shares of the Company's Common Stock issuable upon exercise of Warrants or options owned by each as of the same date. The Selling Stockholders may sell their shares of Common Stock upon registration. Selling Stockholders may offer shares under this prospectus from time to time and may elect to sell none, some or all of the shares set forth next to their name. As a result, we cannot estimate the number of shares of Common Stock that a Selling Stockholder will beneficially own after termination of sales under this prospectus. In addition, a Selling Stockholder may have sold, transferred or otherwise disposed of all or a portion of that holder's shares of Common Stock since the date on which they provided information for this table. We have not made independent inquiries about this. We are relying on written commitments from the Selling Stockholders to notify us of any changes in their beneficial ownership after the date they originally provided this information. See "Plan of Distribution" beginning on page 9.

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| <u>Selling Stockholder (1)</u> | <u># of Shares held before Offering</u> | <u>Total # of Shares covered by this Prospectus</u> | <u># of Shares held after Offering</u> | <u>Percentage of Shares After Offering(2)</u> |
|---------------------------------------------------------------------------------|-----------------------------------------|-----------------------------------------------------|----------------------------------------|-----------------------------------------------|
| Matterhorn Offshore Fund Ltd. | 1,975,299(3) | 74,450 | 1,900,849(3) | 5.5%(4) |
| Finderne, LLC | 47,875(5) | 4,500 | 43,375(5) | *(4) |
| Shoshone Partners, LP | 821,200(6) | 19,000 | 802,200(6) | 2.3%(4) |
| Mulsanne Partners, LP | 4,300 | 4,300 | 0 | *(4) |
| Potomac Capital Partners LP | 140,327 | 44,082 | 96,245 | * |
| Potomac Capital International Ltd | 86,049 | 27,356 | 58,693 | * |
| Pleiades Investment Partners-RLP | 98,247 | 31,230 | 67,017 | * |
| Mark E Davis & Mary P Davis Living Trust dtd Sep 20 1995(7) | 171,960(8) | 161,960 | 10,000(8) | * |
| John G Petrovich TR UA Dtd Aug 31 2000 The John G Petrovich Survivor's Trust(9) | 27,974(10) | 15,474 | 12,500(10) | * |
| John Rossi(11) | 30,948 | 30,948 | 0 | * |
| California Institute of Technology | 25,364 | 25,364 | 0 | * |
| Total | 3,429,543 | 438,664 | 2,990,879 | |

* Less than 1%.

- (1) Beneficial ownership is determined in accordance with the rules of the Commission and generally includes voting or investment power with respect to securities. Shares of common stock subject to options or warrants currently exercisable, or exercisable within 60 days of September 14, 2006, are deemed outstanding for computing the percentage of the person holding such options or warrants but are not deemed outstanding for computing the percentage held by any other person.
- (2) Percentages are calculated based on 34,136,608 shares of Common Stock outstanding as of September 14, 2006.
- (3) Includes immediately exercisable warrants to purchase 161,688 shares of Common Stock.
- (4) Based upon a Form 4 filed with the Commission on August 16, 2006, Matterhorn Offshore Fund Ltd., Finderne LLC, Shoshone Partners, L.P. and Mulsanne Partners, LP are collectively controlled by David M. Knott. Mr. Knott previously reported on a Schedule 13G filed with the Commission on February 1, 2006, additional beneficial ownership, personally and through Dorset Management Corporation, of 4,102,881 shares of Common Stock, or approximately 12% of Common Stock as of February 1, 2006.
- (5) Includes immediately exercisable warrants to purchase 3,075 shares of Common Stock.
- (6) Includes immediately exercisable warrants to purchase 68,400 shares of Common Stock.
- (7) Dr. Mark Davis is a founder and director of the Company's majority-owned subsidiaries, Insert Therapeutics, Inc. and Calando Pharmaceuticals, Inc. Dr. Davis is also a member of the Company's Scientific Advisory Board. Mark E. Davis and Mary P. Davis are trustees of the Mark E Davis & Mary P Davis Living Trust dtd Sep 20 1995.
- (8) Includes options to purchase 10,000 shares of Common Stock.
- (9) Mr. John G. Petrovich is Chief Operating Officer and President of Insert Therapeutics, Inc., and Chief Executive Officer and President of Calando Pharmaceuticals, Inc. Mr. Petrovich is the trustee of the John G Petrovich TR UA Dtd Aug 31 2000 The John G Petrovich Survivor's Trust.
- (10) Includes options to purchase 12,500 shares of Common Stock.
- (11) Dr. John Rossi is a founder of Calando Pharmaceuticals, Inc.

PLAN OF DISTRIBUTION

The Common Stock offered by this prospectus may be sold by the Selling Stockholders, or by their respective pledgees, donees, transferees or other successors in interest. Such sales may be made at fixed prices that may be changed, at market prices prevailing at the time of sale, at prices related to such prevailing market prices, or at negotiated prices, and may be made in the over-the-counter market or any exchange on which the Common Stock may then be listed, or otherwise. In addition, the Selling Stockholders may sell some or all of their Common Stock through:

- a block trade in which a broker-dealer may resell a portion of the block, as principal, in order to facilitate the transaction;
- purchases by a broker-dealer, as principal, and resale by the broker-dealer for its account; or
- ordinary brokerage transactions and transactions in which a broker solicits purchasers.

When selling the Common Stock, the Selling Stockholders may enter into hedging transactions. For example, the Selling Stockholders may:

- enter into transactions involving short sales of the Common Stock by broker-dealers;
- sell Common Stock short themselves and redeliver such shares to close out their short positions;
- enter into option or other types of transactions that require the Selling Stockholder to deliver Common Stock to a broker-dealer, who will then resell or transfer the Common Stock under this prospectus; or
- loan or pledge the Common Stock to a broker-dealer, who may sell the loaned shares or, in the event of default, sell the pledged shares.

The Selling Stockholders may negotiate and pay broker-dealers commissions, discounts or concessions for their services. Broker-dealers engaged by the Selling Stockholders may allow other broker-dealers to participate in resales. However, the Selling Stockholders and any broker-dealers involved in the sale or resale of the Common Stock may qualify as “underwriters” within the meaning of the Section 2(a)(11) of the Securities Act of 1933 (the “Securities Act”). In addition, the broker-dealers’ commissions, discounts or concession may qualify as underwriters’ compensation under the Securities Act. If the Selling Stockholders qualify as “underwriters,” they will be subject to the prospectus delivery requirements of Section 5(b)(2) of the Securities Act. In addition to selling their Common Stock under this prospectus, the Selling Stockholders may:

- agree to indemnify any broker-dealer or agent against certain liabilities related to the selling of the Common Stock, including liabilities arising under the Securities Act;
- transfer their Common Stock in other ways not involving market makers or established trading markets, including, but not limited to, directly by gift, distribution, privately negotiated transactions in compliance with applicable law or other transfer; or
- sell their Common Stock under Rule 144 of the Securities Act rather than under this prospectus, if the transaction meets the requirements of Rule 144. Each Selling Stockholder will bear all expenses with respect to the offering of Common Stock by such Selling Stockholder.

LEGAL OPINION

Certain legal matters relating to the validity of the Common Stock offered by this prospectus will be passed upon for us by Alschuler Grossman Stein & Kahan LLP, Santa Monica, California.

EXPERTS

The financial statements of the Company incorporated in this prospectus by reference to the Company's Annual Reports on Form 10-KSB for the year ended September 30, 2005 and 2004, have been so incorporated in reliance on the report dated December 23, 2003 of Kevin G. Breard, CPA, An Accountancy Corporation, and on the report dated November 5, 2004, except for note 10 as to which the date is December 9, 2004 and the report dated November 30, 2005, of Rose, Snyder & Jacobs, a corporation of Certified Public Accountants, given on the authority of said firms as experts in auditing and accounting.

WHERE TO FIND ADDITIONAL INFORMATION

The Company files annual, quarterly and special reports, proxy statements and other information with the SEC. You may read and copy any document filed by the Company at the SEC's Public Reference Room at 450 Fifth Street, N.W., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room. The Company's filings with the SEC are also available to the public at the SEC's Internet web site: <http://www.sec.gov>. You may also read and copy this information at the National Association of Securities Dealers, Inc., 1735 K Street, N.W., Washington, D.C. 20006.

The Company has filed a registration statement, of which this prospectus is a part, covering the securities offered hereby. As allowed by Commission rules, this prospectus does not include all of the information contained in the registration statement and the included exhibits, financial statements and schedules. You are referred to the registration statement, the included exhibits, financial statements and schedules for further information. This prospectus is qualified in its entirety by such other information.

INFORMATION INCORPORATED BY REFERENCE

The SEC allows the Company to "incorporate by reference" the information that is filed by the Company with the SEC, which means that the Company can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and later information that the Company files with the SEC will automatically update and supersede this information. This prospectus incorporates by reference the documents listed below, and any future filings made with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act"), until the Selling Stockholders sell all of the Common Stock offered herein. The documents incorporated by reference are:

1. The Company's Annual Report on Form 10-KSB/A for the fiscal year ended September 30, 2005, filed on December 22, 2005;
2. The Company's Proxy Statement on Form DEF 14-A, filed on January 18, 2006;
3. The Company's Current Reports on Form 8-K, filed on January 18, 2006, January 24, 2006, February 28, 2006, April 6, 2006, June 8, 2006 and June 16, 2006;
4. The Company's Quarterly Reports on Form 10Q for the quarter ended December 31, 2005, filed on February 9, 2006, for the quarter ended March 31, 2006, filed on May 10, 2006 and for the quarter ended June 30, 2006, filed on August 9, 2006;
5. The description of the Common Stock contained in the Company's Information Statement on Schedule 14-C, filed on December 22, 2000; and
6. 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 this Registration Statement and prior to the filing of a post-effective amendment to this registration statement of which this prospectus is a part that indicates that all securities offered hereunder have been sold, or which deregisters all securities then remaining unsold under such registration statement of which this prospectus forms a part, shall be deemed to be incorporated by reference in the registration statement and to be a part hereof from the date of filing of such documents, provided that all documents "furnished" by the Company to the SEC and not "filed" are not deemed incorporated by reference herein.

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The Company will provide, without charge, to each person, including any beneficial owner, to whom a copy of this prospectus is delivered, upon such person's written or oral request, a copy of any and all of the information incorporated by reference in this prospectus, other than exhibits to such documents, unless such exhibits are specifically incorporated by reference into the information that this prospectus incorporates. Requests should be directed to the Secretary at Arrowhead Research Corporation, 201 South Lake Avenue, Suite 703, Pasadena, California 91101; telephone: (626) 304-3400.

**UP TO 438,664 SHARES OF COMMON STOCK
ARROWHEAD RESEARCH CORPORATION**

PROSPECTUS

September __, 2006

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the costs and expenses, payable by the Company in connection with the registration and sale of the Common Stock being registered. All amounts are estimates except the SEC registration fee.

| | <u>Amount to be paid</u> |
|------------------------------|--------------------------|
| SEC registration fee | \$ 225.06 |
| Printing expense | 5,000 |
| Legal fees and expenses | 10,000 |
| Accounting fees and expenses | 1,000 |
| Transfer Agent Fees 1,000 | 1,000 |
| Miscellaneous Fees | 1,000 |
| Total | <u>\$ 18,225.06</u> |

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 Act and is, therefore, unenforceable.

Item 16. Exhibits.

See Exhibit Index set forth on page II-4 to this Registration Statement.

Item 17. Undertakings.

The Company hereby undertakes:

(a) *Rule 415 Offering.*

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement 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;

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(2) That, for the purpose of determining any liability under the Securities Act, each 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.

(b) Filings incorporating subsequent Exchange Act documents by reference.

The Company hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Company's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (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 this 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.

(c) Request for Acceleration of Effective Date.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, 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.

In the event that a claim for indemnification against such liabilities (other than the payment by the Company of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Company 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 Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Company certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Pasadena, State of California, on September 14, 2006.

ARROWHEAD RESEARCH CORPORATION

By: /s/ R. Bruce Stewart
R. Bruce Stewart, Chief Executive Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints R. Bruce Stewart and Joseph T. Kingsley as attorneys-in-fact, with power of substitution, in any and all capacities, to sign any and all amendments and post-effective amendments to this registration statement, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1933, as amended this Registration Statement on Form S-3 has been signed by the following persons in the capacities and on the dates indicated.

| <u>Signature</u> | <u>Office(s)</u> | <u>Date</u> |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------|
| <u>/s/ R. Bruce Stewart</u> R. Bruce Stewart | Chief Executive Officer (Principal Executive Officer) and Chairman | September 14, 2006 |
| <u>/s/ Joseph T. Kingsley</u> Joseph T. Kingsley | President, Chief Financial Officer (Principal Financial and Accounting Officer) and Secretary | September 14, 2006 |
| <u>/s/ Edward W. Frykman</u> Edward W. Frykman | Director | September 14, 2006 |
| <u>/s/ LeRoy T. Rahn</u> LeRoy T. Rahn | Director | September 14, 2006 |
| <u>/s/ Charles P. McKenney</u> Charles P. McKenney | Director | September 14, 2006 |

EXHIBIT INDEX

| Exhibit Number | Document Description |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1 | Certificate of Incorporation of Interactive, Inc., a Delaware company, dated April 8, 2001 (1) |
| 3.2 | Certificate of Amendment of Certificate of Incorporation of InterActive Group, Inc., dated January 12, 2004 (effecting, among other things a change in the corporation's name to "Arrowhead Research Corporation"). (2) |
| 3.3 | Certificate of Amendment of Certificate of Incorporation of Arrowhead Research Corporation, dated January 26, 2005. (3) |
| 3.4 | Bylaws (1) |
| 5.1 | Opinion of Alschuler Grossman Stein & Kahan LLP* |
| 23.1 | Consent of Rose, Snyder & Jacobs, LLP, the Company's independent registered public accounting firm* |
| 23.2 | Consent of Kevin Breard, CPA, an accountancy corporation, the Company's former independent registered public accounting firm* |
| 23.3 | Consent of Alschuler Grossman Stein & Kahan LLP (included in legal opinion filed as Exhibit 5.1) |

* Filed herewith

- (1) Incorporated by reference from Schedule 14C filed by registrant on December 22, 2000.
- (2) Incorporated by reference from Schedule 14C filed by registrant on December 22, 2003.
- (3) Incorporated by reference from Form 10-QSB for the quarter ended December 31, 2004, filed by registrant on February 11, 2005.

ALSCHULER GROSSMAN STEIN AND KAHAN LLP
1620 26TH STREET, FOURTH FLOOR, NORTH TOWER
SANTA MONICA, CALIFORNIA 90404-4060

September 14, 2006

Board of Directors
Arrowhead Research Corporation
201 South Lake Street, Suite 703
Pasadena, CA 91101

Re: Arrowhead Research Corporation, a Delaware corporation (the "Company").

Ladies and Gentlemen:

We have acted as the Company's counsel in connection with the preparation and filing of that certain Registration Statement on Form S-3 (the "Registration Statement") filed as of the date of this letter with the Securities and Exchange Commission in connection with the registration of 438,664 shares of the Common Stock of the Company (the "Shares") offered in private placements as follows: (i) 204,918 shares of Common Stock sold to certain Selling Stockholders for cash, (ii) 208,382 shares of shares of Common Stock issued pursuant to a Common Stock Transfer Agreement and (iii) 25,364 shares of Common Stock issued to the California Institute of Technology as repayment for certain patent costs and expenses.

As your counsel, we have examined such matters and documents as we have deemed necessary or relevant as a basis for this opinion, and, as to certain factual matters, we have relied on an Officers' Certificate from the Company. We have not undertaken any independent investigation to determine the existence or nonexistence of the facts set forth in that Officers' Certificate, and no inference as to our knowledge of the existence of such facts should be drawn from the fact of our representation of the Company in this or other matters.

Based on these examinations, assumptions and the factual information provided to, and relied upon by, us, it is our opinion that the Shares have been validly issued and are fully paid and non-assessable.

We consent to the use of this opinion as an exhibit to the Registration Statement and to the reference to our firm under the caption "Legal Matters."

Very truly yours,

/s/ Alschuler Grossman Stein and Kahan LLP

Alschuler Grossman Stein and Kahan LLP

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in this Registration Statement on Form S-3 of our reports dated November 30, 2005 and November 5, 2004, except for note 10 which date is December 9, 2004 included in its Annual Report on Form 10-KSB for its years ended September 30, 2005 and 2004, respectively. The undersigned also consents to the reference to the undersigned under the heading "Experts" in the Registration Statement.

/s/ ROSE, SNYDER & JACOBS

Rose, Snyder & Jacobs
A Corporation of Certified Public Accountants
Encino, California
September 13, 2006

CONSENT OF INDEPENDENT ACCOUNTANTS

The undersigned hereby consent to the incorporation by reference in this Registration Statement on Form S-3 of the report of the undersigned dated December 23, 2003, relating to the financial statements of Arrowhead Research Corporation, which is incorporated by reference in the Annual Report on Form 10-KSB of Arrowhead Research Corporation for the year ended September 30, 2004. The undersigned also consents to the references to the undersigned under the heading "Experts" in such Registration Statement.

KEVIN BREARD, CPA, AN ACCOUNTANCY CORPORATION

Northridge, California
September 8, 2006