ARCA biopharma, Inc.
Form 424B4
July 31, 2013

Prospects Supplement No. 4 **Filed pursuant to Rule 424(b)(4)**

(to Prospectus dated May 30, 2013) **Registration No. 333-187508**

125,000 Shares of Series A Convertible Preferred Stock

12,500,000 Shares of Common Stock Underlying the Preferred Stock

Warrants to Purchase up to 6,250,000 Shares of Common Stock and

6,250,000 Shares of Common Stock Underlying the Warrants

ARCA biopharma, Inc.

This prospectus supplement supplements the prospectus dated May 30, 2013 (the Prospectus), as supplemented by that certain Prospectus Supplement No. 1 dated July 17, 2013 (Supplement No. 1), by that certain Prospectus Supplement No. 2 dated July 19, 2013 (Supplement No. 2), and by that certain Prospectus Supplement No. 3 dated July 24, 2013 (Supplement No. 3), which forms a part of our Registration Statement on Form S-1 (Registration No. 333-187508). This prospectus supplement is being filed to update and supplement the information in the Prospectus, Supplement No. 1, Supplement No. 2 and Supplement No. 3 with the information contained in our current report on Form 8-K, filed with the Securities and Exchange Commission (the Commission) on July 30, 2013 (the Current Report). Accordingly, we have attached the Current Report to this prospectus supplement.

The Prospectus, Supplement No. 1, Supplement No. 2, Supplement No. 3 and this prospectus supplement relate to the offer and sale of up to 125,000 shares of Series A Convertible Preferred Stock (Preferred Stock) which are convertible into 12,500,000 shares of Common Stock, warrants to purchase up to 6,250,000 shares of our Common Stock and 6,250,000 shares of Common Stock underlying the warrants.

This prospectus supplement should be read in conjunction with the Prospectus, Supplement No. 1, Supplement No. 2 and Supplement No. 3. This prospectus supplement updates and supplements the information in the Prospectus, Supplement No. 1, Supplement No. 2 and Supplement No. 3. If there is any inconsistency between the information in the Prospectus, Supplement No. 1, Supplement No. 2, Supplement No. 3 and this prospectus supplement, you should rely on the information in this prospectus supplement.

Our common stock is traded on the Nasdaq Global Market under the trading symbol ABIO. On July 30, 2013, the last reported sale price of our common stock was $1.40 per share.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading Risk Factors beginning on page 5 of the Prospectus and beginning on page 23 of our quarterly report on Form 10-Q for the quarterly period ended March 31, 2013 before you decide whether to invest in shares of our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if the Prospectus or this prospectus supplement is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is July 30, 2013

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d)

of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): July 30, 2013 (July 26, 2013)

ARCA biopharma, Inc.

(Exact Name of Registrant as Specified in Charter)

Delaware	**000-22873**	**36-3855489**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(I.R.S. Employer Identification No.)**

8001 Arista Place, Suite 430, Broomfield, CO 80021

(Address of Principal Executive Offices) (Zip Code)

(720) 940-2200

(Registrant s telephone number, including area code)

Not Applicable

(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

¨ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

¨ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

¨ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

¨ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 5.02. Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

On July 26, 2013, the Board of Directors (the Board) of ARCA biopharma, Inc. (the Company) elected Raymond L. Woosley, M.D., Ph.D. as a director of the Company to fill a newly created seat on the Board. Dr. Woosley was elected for a term expiring at the Company s 2015 annual stockholders meeting. Dr. Woosley was also appointed to serve on the Board s Compensation and Nominating and Corporate Governance Committees. A copy of the press release relating to Dr. Woosley s appointment is attached hereto as Exhibit 99.1.

Dr. Woosley is currently the President, Emeritus, of the Critical Path Institute (C-Path), a non-profit, public-private partnership with the United States Food and Drug Administration, of which he was a founder, and where he served as President, Chief Executive Officer and Chairman of the Board from 2005 to 2011. Since 2012, Dr. Woosley is also the President and Chairman of the Board of the Arizona Center for Education and Research on Therapeutics (AzCERT), an independent, nonprofit research and education organization dedicated to the safe use of medicines. Since 2001, Dr. Woosley has also been a Professor of Medicine and Pharmacology at The University of Arizona Health Sciences Center, and Professor, Emeritus, since 2012, where he was also Vice President for Health Sciences from 2001 to 2005, and Dean of the College of Medicine from 2001 to 2002. From 1988 to 2000, Dr. Woosley was a professor of pharmacology and medicine at the Georgetown University School of Medicine, where he was also Director of the Institute of Cardiovascular Sciences from 1994 to 2000, and Division Chief, Clinical Pharmacology, in the Department of Medicine from 1988 to 1994. Dr. Woosley earned his Ph.D. in Pharmacology from the University of Louisville, and his M.D. from the University of Miami.

In connection with his appointment, and pursuant to the Company s previously adopted director compensation policy, the Company granted Dr. Woosley an option to purchase 1,250 shares of common stock at an exercise price of $1.40 per share, the closing price of the Company s common stock on July 26, 2013. The option is subject to the terms and conditions of the Company s 2004 Equity Incentive Plan, as amended (the Plan), and the Company s standard forms of Option Grant Notice and Option Agreement for the Plan, copies of which are filed as Exhibits 10.38 and 10.36 respectively to the Company s Annual Report on Form 10-K filed on March 26, 2009. The option vests in three annual installments on the annual anniversary the date of grant, assuming Dr. Woosley s continued service on the Board for such periods. On the same date, the Company also resumed paying compensation to its existing non-employee directors by granting to Dr. Linda Grais and Dr. John Zabriskie options to purchase 583 shares of common stock at an exercise price of $1.40 per share, the closing price of the Company s common stock on July 26, 2013. The options are subject to the terms and conditions of the Plan and the Company s standard forms of Option Grant Notice and Option Agreement for the Plan. The options vest in equal monthly installments and will be fully vested as of December 31, 2013, assuming Drs. Grace and Zabriskie s continued service on the Board for such periods.

In connection with Dr. Woosley s election, Dr. Woosley and the Company also entered into an Indemnity Agreement in the same form as has previously been entered into with the Company s other directors. The Indemnity Agreement generally requires the Company to indemnify Dr. Woosley against liabilities incurred in the performance of his duties to the Company to the maximum extent permitted by Delaware corporate law and the Company s certificate of incorporation and bylaws. The Company s standard form of Indemnity Agreement is filed as Exhibit 10.52 to its Annual Report on Form 10-K filed on March 26, 2009.

Also on July 26, 2013, Jean-Francois Formela, M.D. notified the Board of his resignation as a Director of the Board. Dr. Formela s resignation not to stand for re-election is not the result of any disagreements with the Company relating to its operations, policies or practices.

Item 5.08. Shareholder Director Nominations.

On July 26, 2013, the Board approved September 17, 2013 as the date of the Company s Annual Meeting. The Board also approved July 30, 2013 as the record date for stockholders entitled to notice of and to vote at the Annual Meeting.

Because the Annual Meeting will be held more than 30 days from the calendar date of the Company s 2012 Annual Meeting of Stockholders, the due dates for the provision of any qualified stockholder proposal or qualified stockholder nominations under the rules of the SEC and the bylaws of the Company listed in the Company s 2012 Proxy Statement on Schedule 14A as filed with the SEC on April 5, 2012 are no longer applicable. Such nominations or proposals, including any notice on Schedule 14N, are now due to the Company no later than August 9, 2013. The Company currently intends to make its proxy materials available beginning on or about August 8, 2013.

Section 9 Financial Statements and Exhibits

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits.

Exhibit Number	Description
99.1	Press Release titled Raymond L. Woosley, M.D., Ph.D. Appointed to ARCA biopharma Board of Directors dated July 30, 2013.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Dated: July 30, 2013

ARCA biopharma, Inc.

(Registrant)

By: /s/ Patrick M. Wheeler
Name: Patrick M. Wheeler
Title: Chief Financial Officer

INDEX TO EXHIBITS

Exhibit Number	Description
99.1	Press Release titled Raymond L. Woosley, M.D., Ph.D. Appointed to ARCA biopharma Board of Directors dated July 30, 2013.

Exhibit 99.1

RAYMOND L. WOOSLEY, M.D., PH.D. APPOINTED TO ARCA BIOPHARMA BOARD OF DIRECTORS

Broomfield, CO, July 30, 2013 ARCA biopharma, Inc. (Nasdaq: ABIO), a biopharmaceutical company developing genetically-targeted therapies for cardiovascular diseases, today announced that Raymond L. Woosley, M.D., Ph.D, has been appointed to the Company s Board of Directors. He will serve on the Compensation and Nominating and Corporate Governance Committees of the Board of Directors.

Dr. Woosley is currently the President, Emeritus, of the Critical Path Institute (C-Path), a non-profit, public-private partnership with the United States Food and Drug Administration, of which he was a founder, and where he served as President, Chief Executive Officer and Chairman of the Board from 2005 to 2011. Since 2012, Dr. Woosley is also the President and Chairman of the Board of the Arizona Center for Education and Research on Therapeutics (AzCERT), an independent, nonprofit research and education organization dedicated to the safe use of medicines.

We are honored to have Dr. Woosley join the ARCA Board of Directors, said Dr. Michael R. Bristow, President and Chief Executive Officer of ARCA. With his extensive expertise and decades-long experience in cardiovascular clinical pharmacology, anti-arrhythmic therapeutics, pharmacogenetic drug development and regulatory science, Dr. Woosley will be a valuable addition to the ARCA Board as we continue the development of Gencaro.

I am delighted to join the Board of an organization focused on advancing cardiovascular science and potentially improved medical therapeutics, said Dr. Woosley. ARCA s personalized medicine approach and its comparative effectiveness clinical trial of Gencaro incorporate important aspects of what I believe will be more efficient, informative and effective drug development in the future.

Since 2001, Dr. Woosley has also been a Professor of Medicine and Pharmacology at The University of Arizona Health Sciences Center, and Professor, Emeritus, since 2012, where he was also Vice President for Health Sciences from 2001 to 2005, and Dean of the College of Medicine from 2001 to 2002. From 1988 to 2000, Dr. Woosley was a professor of pharmacology and medicine at the Georgetown University School of Medicine, where he was also Director of the Institute of Cardiovascular Sciences from 1994 to 2000, and Division Chief, Clinical Pharmacology, in the Department of Medicine from 1988 to 1994. Dr. Woosley earned his Ph.D. in Pharmacology from the University of Louisville, and his M.D. from the University of Miami.

Dr. Woosley is a former member of the National Academy of Science s Institute of Medicine s Drug Forum, and his research has been published in over 265 peer-reviewed publications and 50 book chapters.

ARCA also announced that Jean-Francois Formela, M.D., Partner at Atlas Ventures, resigned from the ARCA Board of Directors. Dr. Formela has been a member of ARCA s Board of Directors since February 2006.

We thank Jean-Francois for his leadership and service over the past seven years as a Director for ARCA, said Dr. Bristow. His experience and insight into the pharmaceutical industry have served the company well and directly contributed to the Company reaching its current state, approaching the launch of GENETIC-AF, our Phase 2B/3 clinic trial of Gencaro.

About ARCA biopharma

ARCA biopharma is dedicated to developing genetically-targeted therapies for cardiovascular diseases. The Company s lead product candidate, Gencaro™ (bucindolol hydrochloride), is an investigational, pharmacologically unique beta-blocker and mild vasodilator being developed for atrial fibrillation. ARCA has identified common genetic variations that it believes predict individual patient response to Gencaro, giving it the potential to be the first genetically-targeted atrial fibrillation prevention treatment. ARCA has a collaboration with Medtronic, Inc. for support of the Phase 2B portion of the GENETIC-AF trial. For more information please visit www.arcabiopharma.com.

Safe Harbor Statement

This press release contains forward-looking statements for purposes of the safe harbor provided by the Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, statements regarding the potential impact of ARCA s personalized medicine approach to drug development and the comparative effectiveness GENETIC-AF trial, the potential for genetic variations to predict individual patient response to Gencaro, Gencaro s potential to treat atrial fibrillation, future treatment options for patients with atrial fibrillation, and the potential for Gencaro to be the first genetically-targeted atrial fibrillation prevention treatment. Such statements are based on management s current expectations and involve risks and uncertainties. Actual results and performance could differ materially from those projected in the forward-looking statements as a result of many factors, including, without limitation, the risks and uncertainties associated with: the Company s financial resources and whether they will be sufficient to meet the Company s business objectives and operational requirements; results of earlier clinical trials may not be confirmed in future trials, the protection and market exclusivity provided by the Company s intellectual property; risks related to the drug discovery and the regulatory approval process; and, the impact of competitive products and technological changes. These and other factors are identified and described in more detail in ARCA s filings with the SEC, including without limitation the Company s annual report on Form 10-K for the year ended December 31, 2012, and subsequent filings. The Company disclaims any intent or obligation to update these forward-looking statements.

Contact:

Derek Cole

Investor Relations Advisory Solutions

720.940.2163, derek.cole@arcabiopharma.com

###