
**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): April 30, 2010

ARCA biopharma, Inc.

(Exact Name of Registrant as Specified in Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

000-22873
(Commission File Number)

36-385489
(I.R.S. Employer
Identification No.)

8001 Arista Place, Suite 200, 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))
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Item 1.01 Entry into a Material Definitive Agreement

On April 30, 2010, ARCA biopharma, Inc. (the “Company”) entered into an Amendment No. 1 (the “Amendment”) to its equity distribution agreement, dated December 8, 2009, with Wedbush Securities Inc. f/k/a Wedbush Morgan Securities, Inc. (the “Equity Distribution Agreement”) in order to increase the aggregate offering amount of its common stock, par value \$0.001 per share (the “Shares”), to \$20,000,000 to be sold pursuant the Equity Distribution Agreement.

In connection with this increase, on April 30, 2010, the Company filed an addendum to its previously filed prospectus supplement to its existing shelf registration statement on file with the Securities and Exchange Commission (the “Commission”).

The Shares will be issued pursuant to the Company’s shelf registration statement on Form S-3 (File No. 333-148288), which became effective with the Commission on January 16, 2008 (the “Registration Statement”).

The Amendment is filed as Exhibit 10.1 to this Current Report on Form 8-K, and the description of the Amendment is qualified in its entirety by reference to such exhibit. The Amendment is also filed with reference to, and is hereby incorporated by reference into, the Registration Statement.

Attached hereto as Exhibit 5.1 is an opinion of Cooley LLP regarding the legality of the Shares. This opinion is also filed with reference to, and is hereby incorporated by reference into, the Registration Statement.

Item 9.01 Financial Statements and Exhibits

(d) Exhibits

<u>Exhibit No.</u>	<u>Description</u>
5.1	Opinion of Cooley LLP
10.1	Amendment No. 1, dated April 30, 2010 to the Equity Distribution Agreement dated December 8, 2009 between ARCA biopharma, Inc. and Wedbush Securities, Inc.
23.1	Consent of Cooley LLP (included in Exhibit 5.1 above)

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: April 30, 2010

ARCA biopharma, Inc.
(Registrant)

By: /s/ Patrick M. Wheeler

Name: Patrick M. Wheeler

Title: Acting Chief Financial Officer

EXHIBIT INDEX

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23.1	Consent of Cooley LLP (included in Exhibit 5.1 above)



Brent D. Fassett
(720) 566-4025
fassettbd@cooley.com

April 30, 2010

ARCA biopharma, Inc.
8001 Arista Place, Suite 200
Broomfield, CO 80021

Ladies and Gentlemen:

You have requested our opinion with respect to certain matters in connection with the public offering by ARCA biopharma, Inc., a Delaware corporation (the "**Company**"), of its of the Company's common stock, par value \$0.001 per share having an aggregate offering price of up to \$20,000,000 (the "**Shares**"), covered by the Company's Registration Statement on Form S-3 (Registration Statement No. 333-148288, the "**Registration Statement**") and the related Base Prospectus, Prospectus Supplement and the Addendum to Prospectus Supplement (collectively, the "**Prospectus**") filed with the Securities and Exchange Commission (the "**Commission**"). All of the Shares are to be sold by the Company as described in the Registration Statement and the Prospectus. The Shares have been and will be sold in accordance with the Equity Distribution Agreement, dated December 8, 2009, between the Company and Wedbush Securities Inc. f/k/a Wedbush Morgan Securities, Inc. as agent and/or principal, as amended by Amendment No. 1 to Equity Distribution Agreement, dated April 30, 2010 (as amended, the "**Distribution Agreement**").

In connection with this opinion, we have examined and relied upon the Registration Statement and Prospectus filed with the Commission pursuant to Rule 424 under the Securities Act of 1933, as amended, the Company's certificate of incorporation and bylaws, as currently in effect, and the originals or copies certified to our satisfaction of such records, documents, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. We have assumed the genuineness and authenticity of all signatures on original documents; the authenticity of all documents submitted to us as originals; the conformity to originals of all documents submitted to us as copies; the accuracy, completeness and authenticity of certificates of public officials; and the due authorization, execution and delivery of all documents, where authorization, execution and delivery are prerequisites to the effectiveness of such documents. This opinion is limited to the federal laws of the United States of America and the General Corporation Law of the State of Delaware. We express no opinion as to whether the laws of any particular jurisdiction apply and no opinion to the extent that the laws of any other jurisdiction are applicable to the subject matter hereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold and issued against payment therefor in accordance with the Distribution Agreement, Registration Statement and the related Prospectus and Prospectus Supplement, have been and will be validly issued, fully paid and non-assessable.

380 INTERLOCKEN CRESCENT, SUITE 900, BROOMFIELD, CO 80021-8023 T: (720) 566-4000 F: (720) 566-4099 WWW.COOLEY.COM



ARCA biopharma, Inc.

April 30, 2010

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We consent to the reference to our firm under the caption "Legal Matters" in the Prospectus Supplement and the Prospectus included in the Registration Statement and to the filing of this opinion as an exhibit to a Current Report on Form 8-K to be filed with the Commission for incorporation by reference into the Registration Statement and the Prospectus Supplement filed in connection with the offering and the sale of the Shares.

Very truly yours,

Cooley LLP

By: /s/ Brent D. Fassett

Brent D. Fassett, Partner

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ARCA BIOPHARMA, INC.

\$20,000,000

Common Stock
(par value \$0.001 per share)

AMENDMENT NO. 1

TO

EQUITY DISTRIBUTION AGREEMENT

April 30, 2010

Wedbush Securities Inc.
One Bush Street, Suite 1700
San Francisco, California 94104

Ladies and Gentlemen:

ARCA biopharma, Inc., a Delaware Corporation (the "Company") and Wedbush Securities Inc. f/k/a Wedbush Morgan Securities, Inc., as sales agent or principal ("Wedbush") being parties to that certain Equity Distribution Agreement, dated December 8, 2009 (the "Original Agreement"), now desire to, and hereby do, amend the Original Agreement as follows:

SECTION 1. Amendment of the Original Agreement.

(a) All references in the Original Agreement to the phrase "\$10 million" and "\$10,000,000" are hereby changed to "\$20 million" and "\$20,000,000," respectively.

SECTION 2. Miscellaneous.

Except for the changes set forth in Section 1 above, the Original Agreement is in all respects ratified and confirmed; the Original Agreement and this Amendment No. 1 shall effectively constitute one and the same agreement; and all references in the Original Agreement to "this Agreement" or the like shall refer to the Original Agreement as amended by this Amendment No. 1, unless the context clearly requires otherwise.

If the foregoing correctly sets forth the understanding between the Company and Wedbush, please so indicate in the space provided below for that purpose, whereupon this Amendment No. 1 and your acceptance shall constitute a binding agreement between the Company and Wedbush.

Very truly yours,

ARCA BIOPHARMA, INC.

By: /s/ Michael R. Bristow

Name: Michael R. Bristow, Ph.D., M.D.

Title: President and Chief Executive Officer

ACCEPTED as of the date
first written above

WEDBUSH SECURITIES INC.

By: /s/ Thomas J. Dietz

Name: Thomas J. Dietz

Title: Head of Investment Banking

Signature Page to Amendment No. 1 Equity Distribution Agreement