

ARCA biopharma, Inc.  
Form 424B4  
August 11, 2015

Prospectus Supplement No. 41      Filed pursuant to Rule 424(b)(4)  
Registration No. 333-187508  
(to Prospectus dated May 30, 2013)

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"), by that certain Prospectus Supplement No. 3 dated July 24, 2013 ("Supplement No. 3"), by that certain Prospectus Supplement No. 4 dated July 30, 2013 ("Supplement No. 4"), by that certain Prospectus Supplement No. 5 dated August 6, 2013 ("Supplement No. 5"), by that certain Prospectus Supplement No. 6 dated September 4, 2013 ("Supplement No. 6"), by that certain Prospectus Supplement No. 7 dated September 23, 2013 ("Supplement No. 7"), by that certain Prospectus Supplement No. 8 dated October 29, 2013 ("Supplement No. 8"), by that certain Prospectus Supplement No. 9 dated November 6, 2013 ("Supplement No. 9"), by that certain Prospectus Supplement No. 10 dated November 13, 2013 ("Supplement No. 10"), by that certain Prospectus Supplement No. 11 dated November 21, 2013 ("Supplement No. 11"), by that certain Prospectus Supplement No. 12 dated December 5, 2013 ("Supplement No. 12"), by that certain Prospectus Supplement No. 13 dated January 8, 2014 ("Supplement No. 13"), by that certain Prospectus Supplement No. 14 dated February 10, 2014 ("Supplement No. 14"), by that certain Prospectus Supplement No. 15 dated February 12, 2014 ("Supplement No. 15"), by that certain Prospectus Supplement No. 16 dated February 18, 2014 ("Supplement No. 16"), by that certain Prospectus Supplement No. 17 dated March 3, 2014 ("Supplement No. 17"), by that certain Prospectus Supplement No. 18 dated March 20, 2014 ("Supplement No. 18"), by that certain Prospectus Supplement No. 19 dated May 13, 2014 ("Supplement No. 19"), by that certain Prospectus Supplement No. 20 dated June 9, 2014 ("Supplement No. 20"), by that certain Prospectus Supplement No. 21 dated August 13, 2014 ("Supplement No. 21"), by that certain Prospectus Supplement No. 22 dated

August 18, 2014 (“Supplement No. 22”), by that certain Prospectus Supplement No. 23 dated November 12, 2014 (“Supplement No. 23”), by that certain Prospectus Supplement No. 24 dated December 1, 2014 (“Supplement No. 24”), by that certain Prospectus Supplement No. 25 dated December 10, 2014 (“Supplement No. 25”), by that certain Prospectus Supplement No. 26 dated December 11, 2014 (“Supplement No. 26”), by that certain Prospectus Supplement No. 27 dated December 30, 2014 (“Supplement No. 27”), by that certain Prospectus Supplement No. 28 dated February 4, 2015 (“Supplement No. 28”), by that certain Prospectus Supplement No. 29 dated February 17, 2015 (“Supplement No. 29”), by that certain Prospectus Supplement No. 30 dated February 23, 2015 (“Supplement No. 30”), by that certain Prospectus Supplement No. 31 dated March 16, 2015 (“Supplement No. 31”), by that certain Prospectus Supplement No. 32 dated March 19, 2015 (“Supplement No. 32”), by that certain Prospectus Supplement No. 33 dated April 13, 2015 (“Supplement No. 33”), by that certain Prospectus Supplement No. 34 dated April 14, 2015 (“Supplement No. 34”), by that certain Prospectus Supplement No. 35 dated May 12, 2015 (“Supplement No. 35”), by that certain Prospectus Supplement No. 36 dated June 5, 2015 (“Supplement No. 36”), by that certain Prospectus Supplement No. 37 dated June 11, 2015 (“Supplement No. 37”), and by that certain Prospectus Supplement No. 38 dated June 11, 2015 (“Supplement No. 38”), by that certain Prospectus Supplement No. 39 dated June 23, 2015 (“Supplement No. 39”), and by that certain Prospectus Supplement No. 40 dated July 16, 2015 (“Supplement No. 40, and together with Supplement No. 1, Supplement No. 2, Supplement No. 3, Supplement No. 4, Supplement No. 5, Supplement No. 6, Supplement No. 7, Supplement No. 8, Supplement No. 9, Supplement No. 10, Supplement No. 11, Supplement No. 12, Supplement No. 13, Supplement No. 14, Supplement No. 15, Supplement No. 16, Supplement No. 17, Supplement No. 18, Supplement No. 19, Supplement No. 20, Supplement No. 21, Supplement No. 22, Supplement No. 23, Supplement No. 24, Supplement No. 25, Supplement No. 26, Supplement No. 27, Supplement No. 28, Supplement No. 29, Supplement No. 30, Supplement No. 31, Supplement No. 32, Supplement No. 33, Supplement No. 34, Supplement No. 35, Supplement No. 36, Supplement No. 37, Supplement No. 38, and Supplement No. 39, the “Supplements”), which form 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 and the Supplements with the information contained in our Quarterly Report on Form 10-Q, filed with the Securities and Exchange Commission (the “Commission”) on August 11, 2015 (the “Quarterly Report”). Accordingly, we have attached the Quarterly Report to this prospectus supplement.

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The Prospectus, the Supplements 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 and the Supplements. This prospectus supplement updates and supplements the information in the Prospectus and the Supplements. If there is any inconsistency between the information in the Prospectus, the Supplements 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 August 11, 2015, the last reported sale price of our common stock was \$1.01 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 21 of our quarterly report on Form 10-Q for the period ended June 30, 2015 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 August 11, 2015



UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

QUARTERLY REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
FOR THE QUARTERLY PERIOD ENDED JUNE 30, 2015

OR

TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934  
FOR THE TRANSITION PERIOD FROM            TO

Commission File Number 000-22873

ARCA BIOPHARMA, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware  
(State or Other Jurisdiction of  
Incorporation or Organization)

36-3855489  
(I.R.S.  
Employer  
Identification  
Number)

11080 CirclePoint Road, Suite 140, Westminster, CO  
(Address of Principal Executive Offices)

80020  
(Zip Code)

(720) 940-2200

(Registrant's Telephone Number, including Area Code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Sections 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes  No

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 smaller reporting company) Smaller reporting company

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Class	Number of Shares Outstanding
Common Stock \$0.001 par value	On August 7, 2015: 63,219,990

ARCA BIOPHARMA, INC.

FORM 10-Q

FOR THE QUARTER ENDED JUNE 30, 2015

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## PART I. FINANCIAL INFORMATION

## ITEM 1. FINANCIAL STATEMENTS

## ARCA BIOPHARMA, INC.

## BALANCE SHEETS

(Unaudited)

	June 30, 2015 (in thousands, except share  and per share amounts)	December 31, 2014
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$44,086	\$ 15,354
Other current assets	241	134
Total current assets	44,327	15,488
Property and equipment, net	34	36
Other assets	754	608
Total assets	\$45,115	\$ 16,132
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$714	\$ 795
Accrued compensation and employee benefits	202	329
Accrued expenses and other liabilities	440	264
Total current liabilities	1,356	1,388
Deferred rent, net of current portion	1	3
Total liabilities	1,357	1,391
Commitments and contingencies		
Stockholders' equity:		
Common stock, \$0.001 par value; 100 million shares authorized	63	21

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at June 30, 2015 and December 31, 2014; 63,219,990

and 21,150,486 shares issued and outstanding at

June 30, 2015 and December 31, 2014, respectively

Additional paid-in capital	133,780	99,342
Accumulated deficit	(90,085 )	(84,622 )
Total stockholders' equity	43,758	14,741
Total liabilities and stockholders' equity	\$45,115	\$ 16,132

See accompanying Notes to Financial Statements

ARCA BIOPHARMA, INC.

STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

(unaudited)

l per share amounts)

ne Statement

ng net income represents net income before merger related expenses. Operating cash net income is equal to operating net income plus  
of intangible amortization

na earnings for six months of The Bank of New York Mellon, assuming transaction close on 7/1/07

of cost savings phased-in

uring charge funding, share repurchase funding and addback of Mellon s existing identified intangible amortization

ting impact of future merger related expenses realized through income statement

ons)

ew York  
Income

Income

fore Adjustments

ments:

ntified Intangible Amortization

Adjustments

ating

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ating Metrics

es reflect purchase accounting adjustments. Adjustments to the income statement are detailed on page 28

ed share repurchases of approximately \$1.0 billion in 2008

non Equity

Tangible Common Equity

months

io

tal  
/07





Annual Retained Earnings<sup>3</sup>

Annual Generation

Years ended 12/31/07

Dividend payout ratio

Share repurchases  
as of year-end

ons)

e'

Net Income

avings

Restructuring Costs<sup>2</sup>

ments, Net of Funding Costs<sup>3</sup>

(15.4x 1-year Forward GAAP)

Return  
ds cost of capital  
te of Return

g stock prices as of 12/1/06

f merger related and restructuring costs are cash related

d GAAP P/E multiple using I/B/E/S median EPS estimates for 2007 applied to 2012 estimated GAAP net income adjusted for net fund

