

ARCA biopharma, Inc.
Form DEF 14A
April 15, 2014

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

SCHEDULE 14A
(Rule 14a-101)
INFORMATION REQUIRED IN PROXY STATEMENT
SCHEDULE 14A INFORMATION
Proxy Statement Pursuant to Section 14(a) of the
Securities Exchange Act of 1934

Filed by the Registrant

Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material Pursuant to § 240.14a-12

ARCA BIOPHARMA, INC.

(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement if Other Than the Registrant)

Payment of Filing Fee (Check the appropriate box)

No fee required.

Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.

1. Title of each class of securities to which transaction applies:

2. Aggregate number of securities to which transaction applies:

3. Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (Set forth the amount on which the filing fee is calculated and state how it was determined):

4. Proposed maximum aggregate value of transaction:

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Fee paid previously with preliminary materials.

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6. Amount Previously Paid:

7. Form, Schedule or Registration Statement No.:

8. Filing Party:

9. Date Filed:

ARCA BIOPHARMA, INC.

11080 CirclePoint Road, Suite 140

Westminster, Colorado 80020

April 15, 2014

Dear Stockholders of ARCA biopharma, Inc.:

You are cordially invited to attend the Annual Meeting of Stockholders of ARCA biopharma, Inc., a Delaware corporation (the Company or ARCA). The meeting will be held on Thursday, June 5, 2014 at 9:00 a.m. local time at the Denver Marriott Westminster Hotel, 7000 Church Ranch Blvd., Westminster, CO 80021.

The matters scheduled to be considered at the meeting are (1) to elect the Board's nominees, Dr. Michael Bristow and Mr. Robert Conway, to the Board of Directors to hold office until the 2017 Annual Meeting of Stockholders, (2) to ratify the selection by the Audit Committee of the Board of Directors of KPMG LLP (KPMG) as the independent registered public accounting firm of the Company for its fiscal year ending December 31, 2014; and (3) to conduct any other business properly brought before the meeting. These items of business are more fully described in this proxy statement that you are encouraged to read in its entirety.

In accordance with the Securities and Exchange Commission (SEC) rule (Notice and Access Rule) that allows companies to furnish their proxy materials (including the form of proxy, this proxy statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on March 20, 2014,) over the Internet, we intend to send a Notice of Internet Availability of Proxy Materials (Notice) on or about April 25, 2014 to our stockholders of record as of April 7, 2014. We will also provide access to our proxy materials over the Internet by April 25, 2014. As a result of the Notice and Access Rule, all stockholders receiving the Notice have the ability to access the proxy materials over the Internet and request to receive a paper copy of the proxy materials by mail. Instructions on how to access the proxy materials over the Internet or to request a paper copy may be found on the Notice. In addition, the Notice contains instructions on how stockholders may request to receive proxy materials electronically by e-mail.

All stockholders are cordially invited to attend the Annual Meeting in person. Whether or not you expect to attend the Annual Meeting, please vote, as instructed in the Notice of Internet Availability of Proxy Materials, via the Internet or the telephone, as promptly as possible in order to ensure your representation at the Annual Meeting. Alternatively, you may follow the procedures outlined in the Notice of Internet Availability of Proxy Materials to request a paper proxy card to submit your vote by mail. Even if you have voted by proxy, you may still vote in person if you attend the Annual Meeting. Please note, however, that if your shares are held of record by a broker, bank or other agent and you wish to vote at the Annual Meeting, you must obtain a proxy issued in your name from that record holder.

Sincerely,

/s/ Christopher Ozeroff

CHRISTOPHER OZEROFF

Secretary, Senior Vice President and General Counsel

ARCA BIOPHARMA, INC.

11080 CirclePoint Road, Suite 140

Westminster, Colorado 80020

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS

TO BE HELD ON JUNE 5, 2014

Notice is hereby given that the Annual Meeting of Stockholders (the Annual Meeting) of ARCA biopharma, Inc., a Delaware corporation (the Company or ARCA) will be held on Thursday, June 5, 2014 at 9:00 a.m. local time at the Denver Marriott Westminster Hotel, 7000 Church Ranch Blvd., Westminster, CO 80021 for the following purposes:

1. To elect the Board's nominees, Dr. Michael Bristow and Mr. Robert Conway, to the Board of Directors to hold office until the 2017 Annual Meeting of Stockholders.
2. To ratify the selection by the Audit Committee of the Board of Directors of KPMG LLP as independent registered public accounting firm of the Company for its fiscal year ending December 31, 2014.
3. To conduct any other business properly brought before the meeting.

These items of business are more fully described in the proxy statement accompanying this Notice.

The record date for the Annual Meeting is April 7, 2014. Only stockholders of record at the close of business on that date may vote at the meeting or any adjournment thereof.

By Order of the Board of Directors:

/s/ Christopher Ozeroff

CHRISTOPHER OZEROFF

Secretary, Senior Vice President and General Counsel

WESTMINSTER, CO

APRIL 15, 2014

Pursuant to the Internet proxy rules promulgated by the Securities and Exchange Commission, the Company has elected to provide access to its proxy materials over the Internet. Accordingly, stockholders of record at the close of business on April 7, 2014 will receive a Notice of Internet Availability of Proxy Materials and may vote at the Annual Meeting and any adjournment or postponement thereof. The Company expects to mail the Notice of Internet Availability of Proxy Materials on or about April 25, 2014.

All stockholders are cordially invited to attend the annual meeting in person. Whether or not you expect to attend the annual meeting, please vote, as instructed in the Notice of Internet Availability of Proxy Materials, via the Internet or the telephone, as promptly as possible in order to ensure your representation at the annual

meeting. Alternatively, you may follow the procedures outlined in the Notice of Internet Availability of Proxy Materials to request a paper proxy card to submit your vote by mail. Even if you have voted by proxy, you may still vote in person if you attend the annual meeting. Please note, however, that if your shares are held of record by a broker, bank or other agent and you wish to vote at the annual meeting, you must obtain a proxy issued in your name from that record holder.

ARCA BIOPHARMA, INC.

11080 CirclePoint Road, Suite 140

Westminster, Colorado 80020

PROXY STATEMENT

FOR THE 2014 ANNUAL MEETING OF STOCKHOLDERS

JUNE 5, 2014

This proxy statement (this Proxy Statement) is being furnished to holders of ARCA biopharma, Inc. (sometimes referred to as the Company, ARCA, we, us, and our) common stock, par value \$0.001 per share (the Common Proxies are being solicited on behalf of the Board of Directors of ARCA (the Board of Directors) to be used at the Annual Meeting of Stockholders (the Annual Meeting) to be held on Thursday, June 5, 2014 at 9:00 a.m. local time at the Denver Marriott Westminster Hotel, 7000 Church Ranch Blvd., Westminster, CO 80021 and at any postponement or adjournment thereof, for the purposes set forth in the Notice of Annual Meeting of Stockholders.

ARCA is using the Securities and Exchange Commission (the SEC) rule that allows companies to furnish their proxy materials over the Internet. As a result, we intend to mail to our stockholders a Notice of Internet Availability of Proxy Materials (the Notice) instead of a paper copy of the proxy materials (including the form of proxy, this Proxy Statement and our Annual Report on Form 10-K for the fiscal year ended December 31, 2013, filed with the SEC on March 20, 2014 (the 2013 Annual Report), collectively, the Proxy Materials) on or about April 25, 2014. We will also provide access to our Proxy Materials over the Internet by April 25, 2014. By furnishing the Notice to our stockholders of record, you ***will not*** receive a printed copy of the Proxy Materials in the mail. Instead, the Notice instructs you on how to access and review all of the important information contained in the Proxy Statement and Annual Report electronically or to receive a printed version in the mail. The Notice also instructs you on how you may submit your proxy over the Internet, by toll-free number or in person at the Annual Meeting. Subsequent to receiving the Notice, all stockholders have the ability to access the Proxy Materials over the Internet and request to receive a paper copy of the Proxy Materials by mail. Instructions on how to access the Proxy Materials over the Internet or to request a paper copy may be found on the Notice. In addition, the Notice contains instructions on how stockholders may request to receive Proxy Materials electronically by e-mail.

All stockholders may view and print ARCA's proxy statement and the 2013 Annual Report, which are available at www.arcabiopharma.com.

QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING

Why did I receive a notice regarding the availability of the Proxy Materials on the Internet?

As described above, pursuant to rules adopted by the SEC, we have elected to provide access to the Proxy Materials over the Internet. Accordingly, on or about April 25, 2014, we expect to send the Notice to ARCA's stockholders of record. The Board of Directors is soliciting your proxy to vote at the Annual Meeting. All stockholders will have the ability to access the Proxy Materials on the website referred to in the Notice or request to receive a printed or electronic set of the Proxy Materials. Instructions on how to access the Proxy Materials over the Internet or to request a printed copy may be found in the Notice.

How do I attend the Annual Meeting?

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The meeting will be held on Thursday, June 5, 2014 at 9:00 a.m. local time at the Denver Marriott Westminster Hotel, 7000 Church Ranch Blvd., Westminster, CO 80021. Directions to the annual meeting may be found at www.arcabiopharma.com. Information on how to vote in person at the Annual Meeting is discussed below.

1.

Who can vote at the Annual Meeting?

Only stockholders of record at the close of business on April 7, 2014 will be entitled to vote at the Annual Meeting. On this record date, there were 21,001,690 shares of common stock outstanding and entitled to vote.

Stockholder of Record: Shares Registered in Your Name

If on April 7, 2014 your shares of our common stock were registered directly in your name with ARCA's transfer agent, Computershare Trust Company N.A., then you are a stockholder of record. As a stockholder of record, you may vote in person at the meeting or vote by proxy. Whether or not you plan to attend the meeting, we urge you to vote by proxy over the telephone or on the Internet as instructed below or return the proxy card we may mail to you to ensure your vote is counted.

Beneficial Owner: Shares Registered in the Name of a Broker or Bank

If, on April 7, 2014, your shares of our common stock were held, not in your name, but rather in an account at a brokerage firm, bank, dealer, or other similar organization, then you are the beneficial owner of shares held in street name and the Notice is being forwarded to you by that organization. The organization holding your account is considered to be the stockholder of record for purposes of voting at the Annual Meeting. As a beneficial owner, you have the right to direct your broker or other agent regarding how to vote the shares in your account. You are also invited to attend the Annual Meeting. However, since you are not the stockholder of record, you may not vote your shares in person at the meeting unless you request and obtain a valid proxy from your broker or other agent.

What am I voting on?

There are two matters scheduled for a vote:

Election of two directors;

Ratification of selection by the Audit Committee of the Board of Directors of KPMG as independent registered public accounting firm of the Company for its fiscal year ending December 31, 2014;

What if another matter is properly brought before the meeting?

The Board of Directors knows of no other matters that will be presented for consideration at the Annual Meeting. If any other matters are properly brought before the meeting, it is the intention of the persons named in the accompanying proxy to vote on those matters in accordance with their best judgment.

How do I vote?

You may either vote For all the nominees to the Board of Directors or you may Withhold your vote for any nominee you specify. For all other matters to be voted on, you may vote For or Against or abstain from voting. The procedures for voting are fairly simple:

Stockholder of Record: Shares Registered in Your Name

If you are a stockholder of record, you may vote in person at the Annual Meeting, vote by proxy over the telephone, vote by proxy through the Internet or vote by proxy using a proxy card that you may request or that we may elect to

deliver at a later time. Whether or not you plan to attend the meeting, we urge you to vote by proxy to ensure your vote is counted. You may still attend the meeting and vote in person even if you have already voted by proxy.

To vote in person, come to the Annual Meeting and we will give you a ballot when you arrive.

2.

To vote using the proxy card, simply complete, sign and date the proxy card that may be delivered and return it promptly in the envelope provided. If you return your signed proxy card to us before the Annual Meeting, we will vote your shares as you direct.

To vote over the telephone, dial toll-free **1-800-652-VOTE (8683)** using a touch-tone phone and follow the recorded instructions. You will be asked to provide the company number and control number from the Notice. Your vote must be received by 1:00 a.m. Mountain Time on June 5, 2014 to be counted.

To vote through the Internet, go to **<http://www.investorvote.com/ABIO>** to complete an electronic proxy card. You will be asked to provide the company number and control number from the Notice. Your vote must be received by 1:00 a.m. Mountain Time on June 5, 2014 to be counted.

Beneficial Owner: Shares Registered in the Name of Broker or Bank

If you are a beneficial owner of shares registered in the name of your broker, bank, or other agent, you should have received a Notice containing voting instructions from that organization rather than from ARCA. Simply follow the voting instructions in the Notice to ensure that your vote is counted. To vote in person at the Annual Meeting, you must obtain a valid proxy from your broker, bank, or other agent. Follow the instructions from your broker or bank included with these proxy materials, or contact your broker or bank to request a proxy form.

We provide internet proxy voting to allow you to vote your shares online, with procedures designed to ensure the authenticity and correctness of your proxy vote instructions. However, please be aware that you must bear any costs associated with your access to the Internet, such as usage charges from internet access providers and telephone companies.

How many votes do I have?

On each matter to be voted upon, you have one vote for each share of common stock you own as of April 7, 2014.

What if I return a proxy card or otherwise vote but do not make specific choices?

If you return a signed and dated proxy card or otherwise vote without marking voting selections, your shares will be voted, as applicable, For the election of both nominees for director, and For the ratification of KMPG as the Company's independent registered public accounting firm for the fiscal year 2014. If any other matter is properly presented at the meeting, your proxy holder (one of the individuals named on your proxy card) will vote your shares using his or her best judgment.

Who is paying for this proxy solicitation?

We will pay for the entire cost of soliciting proxies. In addition to these proxy materials, the directors and employees may also solicit proxies in person, by telephone, or by other means of communication. Directors and employees will not be paid any additional compensation for soliciting proxies. We may also reimburse brokerage firms, banks and other agents for the cost of forwarding proxy materials to beneficial owners.

What does it mean if I receive more than one Notice?

If you receive more than one Notice, your shares may be registered in more than one name or in different accounts. Please follow the voting instructions on each Notice to ensure that all of your shares are voted.

Can I change my vote after submitting my proxy?

Yes. You can revoke your proxy at any time before the final vote at the meeting. If you are the record holder of your shares, you may revoke your proxy in any one of the following ways:

You may submit another properly completed proxy card with a later date.

3.

You may grant a subsequent proxy by telephone or through the Internet.

You may send a timely written notice that you are revoking your proxy to ARCA's Secretary at 11080 CirclePoint Road, Suite 140, Westminster, Colorado, 80020.

You may attend the Annual Meeting and vote in person. Simply attending the meeting will not, by itself, revoke your proxy.

Your most current proxy card or telephone or internet proxy is the one that is counted.

If your shares are held by your broker or bank as a nominee or agent, you should follow the instructions provided by your broker or bank.

When are stockholder proposals due for next year's annual meeting?

To be considered for inclusion in next year's proxy materials, your proposal must be submitted in writing by December 26, 2014, to ARCA's Secretary at 11080 CirclePoint Road, Suite 140, Westminster, Colorado, 80020. If you wish to submit a proposal that is not to be included in next year's proxy materials or nominate a director, you must do so by no earlier than March 7, 2015 and no later than April 6, 2015. You are also advised to review the Company's Bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations.

How are votes counted?

Votes will be counted by the inspector of election appointed for the meeting, who will separately count 1) for the proposal to elect directors, votes For and Withhold; and, 2) with respect to other proposals, votes For and Against, abstentions. Abstentions will be counted towards the vote total for Proposal 2, and will have the same effect as Against votes. Broker non-votes have no effect and will not be counted towards the vote total for any proposal.

What are broker non-votes?

Broker non-votes occur when a beneficial owner of shares held in street name does not give instructions to the broker or nominee holding the shares as to how to vote on matters deemed non-routine. Generally, if shares are held in street name, the beneficial owner of the shares is entitled to give voting instructions to the broker or nominee holding the shares. If the beneficial owner does not provide voting instructions, the broker or nominee can still vote the shares with respect to matters that are considered to be routine, but not with respect to non-routine matters. Under the rules and interpretations of the New York Stock Exchange (NYSE), non-routine matters are matters that may substantially affect the rights or privileges of shareholders, such as mergers, shareholder proposals and, for the first time, under a new amendment to the NYSE rules, elections of directors, even if not contested.

How many votes are needed to approve each proposal?

For the election of directors, the two nominees receiving the most For votes (from the holders of votes of shares present in person or represented by proxy and entitled to vote on the election of directors) will be elected. Only votes For or Withheld will affect the outcome. Broker non-votes will have no effect.

To be approved, Proposal No. 2 to ratify the selection of KPMG LLP as the Company's independent registered public accounting firm for fiscal year 2014 must receive For votes from the holders of a majority of shares present and entitled to vote either in person or by proxy. If you Abstain from voting, it will have the same effect as an Against vote. Broker non-votes will have no effect.

What is the quorum requirement?

A quorum of stockholders is necessary to hold a valid meeting. A quorum will be present if stockholders holding a majority of the outstanding shares of common stock entitled to vote are present at the meeting in person or represented by proxy. On the record date, April 7, 2014, there were 21,001,690 shares of common stock outstanding and entitled to vote. Thus, the holders of 10,500,846 shares of common stock must be present in person or represented by proxy at the meeting to have a quorum.

4.

Your shares will be counted towards the quorum only if you submit a valid proxy (or one is submitted on your behalf by your broker, bank or other nominee) or if you vote in person at the meeting. Abstentions and broker non-votes will be counted towards the quorum requirement. If there is no quorum, the holders of a majority of shares present at the meeting in person or represented by proxy may adjourn the meeting to another date.

How can I find out the results of the voting at the Annual Meeting?

Preliminary voting results will be announced at the Annual Meeting. In addition, final voting results will be published in a current report on Form 8-K that we expect to file within four business days after the Annual Meeting. If final voting results are not available to us in time to file a Form 8-K within four business days after the meeting, we intend to file a Form 8-K to publish preliminary results and, within four business days after the final results are known to us, file an additional Form 8-K to publish the final results.

EXPLANATORY NOTE

The Company, a Delaware Corporation formerly known as Nuvelo, Inc., completed a merger transaction on January 27, 2009, with ARCA biopharma, Inc., a Delaware Corporation (ARCA Colorado), in which ARCA Colorado shareholders acquired a majority of the outstanding stock of the Company, and ARCA Colorado became a subsidiary of the Company. The Company then changed its name to ARCA biopharma, Inc. These transactions are referred to herein as the merger. Unless the context otherwise requires or as otherwise stated herein, all references herein to the Company, ARCA, we, us and our refer to ARCA Colorado prior to the completion of the merger and to ARCA biopharma, Inc. following the completion of the merger and the name change, and all references to Nuvelo refer to Nuvelo, Inc. prior to the completion of the merger and the name change.

NO PERSON IS AUTHORIZED TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATION OTHER THAN THOSE CONTAINED IN THIS PROXY STATEMENT, AND, IF GIVEN OR MADE, SUCH INFORMATION MUST NOT BE RELIED UPON AS HAVING BEEN AUTHORIZED. THE DELIVERY OF THIS PROXY STATEMENT SHALL, UNDER NO CIRCUMSTANCES, CREATE ANY IMPLICATION THAT THERE HAS BEEN NO CHANGE IN THE AFFAIRS OF ARCA SINCE THE DATE OF THIS PROXY STATEMENT.

PROPOSAL 1

ELECTION OF BOARD OF DIRECTORS

The Company's Amended and Restated Certificate of Incorporation provides that the Board of Directors is divided into three classes to provide for staggered terms and that each director will serve for a term of three years or less, depending on the class to which the Board of Directors has assigned a director not previously elected by the stockholders. There are currently no vacancies on the Board. Vacancies on the Board may be filled only by persons elected by a majority of the remaining directors. A director elected by the Board to fill a vacancy in a class, including vacancies created by an increase in the number of directors, shall serve for the remainder of the full term of that class and until the director's successor is duly elected and qualified. The Company may reduce or increase the size of the Board by resolution adopted by the affirmative vote of a majority of the directors.

There is currently one Class I director whose term expires at the annual stockholders' meeting in 2016, two Class III directors, whose terms expire at the annual stockholders' meeting in 2015, and two Class II directors, whose terms expire at the annual stockholders' meeting in 2014. The Board of Directors has nominated two Class II directors, Dr. Michael Bristow and Mr. Robert Conway, for election to the Board of Directors, each for a three-year term ending on the date of the annual meeting in 2017 or until a successor is duly elected and qualified or appointed.

If elected at the Annual Meeting, each of these nominees would serve until the 2017 annual meeting and until his or her successor has been duly elected and qualified, or, if sooner, until the director's death, resignation or removal. It is the Company's policy to encourage directors and nominees for director to attend the Annual Meeting. Three of the Company's directors then on the Board attended the 2013 Annual Meeting of Stockholders in person, and two attended by telephone.

Directors are elected by a plurality of the votes of the holders of shares present in person or represented by proxy and entitled to vote on the election of directors. The two nominees receiving the highest number of affirmative votes will be elected. Each person nominated for election has agreed to serve if elected. The Company's management has no reason to believe that any nominee will be unable to serve.

Director Qualifications and Diversity

The below paragraphs provide information as of the date of this proxy statement about each nominee and current members of the Board of Directors, including age, all positions currently held, principal occupation and business experience for the past five years. In addition to the information presented regarding each nominee's specific experience, qualifications, attributes and skills that led the Board to conclude that such director or nominee should be able to serve as a director, the Board also believes that all of the directors and nominees have a reputation of integrity, honesty and adherence to high ethical standards. They each have demonstrated business acumen and an ability to exercise sound judgment as well as a commitment to service to ARCA and the Board.

Our Nominating and Corporate Governance Committee considers diversity in the director identification and nomination process. The Nominating and Corporate Governance Committee seeks nominees with a broad diversity of experience, professions, skills, geographic representation and backgrounds. Such Committee does not assign specific weights to particular criteria and no particular criterion is necessarily applicable to all prospective nominees. ARCA believes that the backgrounds and qualifications of the directors, considered as a group, should provide a significant composite mix of experience, knowledge and abilities that will allow the Board to fulfill its responsibilities. Nominees are not discriminated against on the basis of race, religion, national origin, sexual orientation, disability or any other basis proscribed by law.

6.

NOMINEES FOR ELECTION FOR A THREE-YEAR TERM EXPIRING AT THE 2017 ANNUAL MEETING

THE BOARD OF DIRECTORS RECOMMENDS

A VOTE IN FAVOR OF EACH NAMED NOMINEE.

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

Dr. Bristow, age 69, has served as the Company's President and Chief Executive Officer since July 2009. Prior to that time, Dr. Bristow served as the Company's Chief Science and Medical Officer and a director since the merger with Nuvelo. Dr. Bristow has also served as a director of ARCA Colorado since November 2006. Dr. Bristow was one of the founders of ARCA Colorado in September 2004, and served as its Chairman and Chief Executive Officer from that date until he was appointed to the position of Chief Science and Medical Officer in November 2006. Dr. Bristow is a Professor of Medicine and the former Head of Cardiology at the University of Colorado Health Sciences Center, where he has been since October 1991. Dr. Bristow was one of the founders of Myogen, Inc. and served as Myogen's Chief Science and Medical Officer from October 1996 to February 2006 and as a Scientific Advisor to Myogen from February 2006 until the acquisition of Myogen by Gilead Sciences, Inc. in November 2006. Dr. Bristow is an appropriate member of the Company's Board of Directors given his extensive experience and expertise as a cardiologist, medical researcher and drug developer in the field of cardiovascular medicine, and heart failure specifically, and his experience as a founder and manager of a cardiovascular-focused, public pharmaceutical company. Dr. Bristow also has extensive experience with, and knowledge of, ARCA's business, as the founder and former Chief Science and Medical Officer of ARCA Colorado, and the current President and Chief Executive Officer of ARCA, and as a Board member of ARCA Colorado since 2005, and of the Company since January 2009.

Robert E. Conway

Mr. Conway, age 60, was appointed to the ARCA Board of Directors in September 2013. Mr. Conway served as the Chief Executive Officer and member of the Board of Directors of Array BioPharma from 1999 to 2012. Array is a public biopharmaceutical company. Prior to joining Array, Mr. Conway was the Chief Operating Officer and Executive Vice President of Hill Top Research, Inc., from 1996 to 1999. From 1979 until 1996, Mr. Conway held various executive positions for Corning Inc. including Corporate Vice President and General Manager of Corning Hazleton, Inc., a contract research organization. From 2004 to 2013, he served on the Boards of Directors of PRA International, Inc., which was a public company for a portion of his tenure there, and eResearch Technology, Inc., a private company. Mr. Conway serves as the Chairman of Wall Family Enterprise, a leading library and education supplies company. In addition, Mr. Conway is a member of the Strategic Advisory Committee of Genstar Capital, LLC. Mr. Conway received a B.S. in accounting from Marquette University in 1976. He is an appropriate nominee to the Company's Board of Directors given his experience and expertise in the pharmaceutical industry, in pharmaceutical development and clinical trials, and in corporate finance, governance, accounting and public company compliance.

DIRECTORS CONTINUING IN OFFICE UNTIL THE 2015 ANNUAL MEETING

Raymond L. Woosley, M.D., Ph.D.

Dr. Woosley, age 71, was appointed to the ARCA Board of Directors in July 2013. Dr. Woosley is currently the President Emeritus, of the Critical Path Institute (C-Path), a non-profit, public-private partnership with the Federal Food and Drug Administration, of which he was a founder in November 2004, and where he served as President, Chief Executive Officer and Chairman of the Board from 2005 to 2011. Since 2012, Dr. Woosley has also been the Director of the Arizona Center for Education and Research on Therapeutics (AzCERT), an independent, nonprofit research and education organization. Since 2001, Dr. Woosley has also been a Professor of Medicine and

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Pharmacology at The University of Arizona Health Sciences Center (UAHSC), and, since 2012, Professor Emeritus, 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 2001, Dr. Woosley was a professor of medicine at the Georgetown University School of Medicine, where he was also Director of the Institute of Cardiovascular Sciences

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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's research has been published in over 265 peer-reviewed publications and 50 book chapters. Dr. Woosley is an appropriate member of the Company's Board of Directors, given his expertise and experience in cardiovascular clinical pharmacology, anti-arrhythmic therapeutics, pharmacogenetic drug development and therapeutic regulatory approval.

Dan J. Mitchell

Mr. Mitchell, age 57, was appointed to the ARCA Board of Directors in February 2014. He founded and is a manager of Sequel Venture Partners, L.L.C., a venture capital firm formed in January 1997. Prior to founding Sequel Venture Partners, Mr. Mitchell was a founder of Capital Health Venture Partners, a health care focused venture capital firm, where he was a General Partner from October 1986 until 2006, and he was in the Venture Capital Division of the Trust Department of the First National Bank of Chicago from 1983 to 1985. He currently serves on the board of directors of several private companies. Mr. Mitchell holds a B.S. from the University of Illinois and an M.B.A. from the University of California at Berkeley. Mr. Mitchell is an appropriate member of the Company's Board of Directors given his expertise and experience in the pharmaceutical industry, pharmaceutical development, and in corporate finance and governance.

DIRECTORS CONTINUING IN OFFICE UNTIL THE 2016 ANNUAL MEETING

Linda Grais, M.D.

Dr. Grais, age 57, has served as a member of the Company's Board of Directors since the merger with Nuvelo in January 2009. Before the merger, Dr. Grais had served as a director of ARCA Colorado since May 2007. Dr. Grais has been a director of Ocera Therapeutics, Inc., a public biopharmaceutical company, since January 2008 and became President and Chief Executive Officer of Ocera in June 2012. Dr. Grais served as a Managing Member at InterWest Partners, a venture capital firm from May 2005 until February 2011. From July 1998 to July 2003, Dr. Grais was a founder and executive vice president of SGX Pharmaceuticals Inc., a drug discovery company. Prior to that, she was a corporate attorney at Wilson Sonsini Goodrich & Rosati, where she practiced in such areas as venture financings, public offerings and strategic partnerships. Before practicing law, Dr. Grais worked as an assistant clinical professor of Internal Medicine and Critical Care at the University of California, San Francisco. Dr. Grais received a B.A. from Yale University, magna cum laude, and Phi Beta Kappa, an M.D. from Yale Medical School and a J.D. from Stanford Law School. Dr. Grais is an appropriate member of the Company's Board of Directors because of her diverse training and experience as both a medical doctor and a lawyer, her experience as a founder and senior executive of a pharmaceutical company, and her experience as an investor in new life sciences companies. She also has extensive experience with and knowledge of the Company's business from her service on the Board of ARCA Colorado since 2007, and her service as a Board and Committee member for the Company since January 2009.

INFORMATION REGARDING THE BOARD OF DIRECTORS AND CORPORATE GOVERNANCE

INDEPENDENCE OF THE BOARD OF DIRECTORS

As required under the NASDAQ Stock Market (NASDAQ) listing standards, a majority of the members of a listed company's Board of Directors must qualify as independent, as affirmatively determined by the Board of Directors. The Board consults with the Company's counsel to ensure that the Board's determinations are consistent with relevant securities and other laws and regulations regarding the definition of independent, including those set forth in pertinent listing standards of the NASDAQ, as in effect from time to time.

8.

Consistent with these considerations, after review of all relevant identified transactions or relationships between each director, or any of his or her family members, and the Company, its senior management and its independent registered public accounting firm, the Board has affirmatively determined that the following four directors are independent directors within the meaning of the applicable NASDAQ listing standards: Mr. Conway, Dr. Grais, Mr. Mitchell and Dr. Woosley. In making this determination, the Board found that none of the directors or nominees for director had a material or other disqualifying relationship with the Company. Dr. Bristow, the Company's President and Chief Executive Officer is not an independent director by virtue of his relationship with the Company.

BOARD LEADERSHIP STRUCTURE

The Company has structured its Board of Directors in a way that the Company believes effectively serves its objectives of corporate governance and management oversight. The Company separates the roles of CEO and Chairman of the Board in recognition of the differences between the two roles. The Company believes that the CEO should be responsible for the day to day leadership and performance of the Company, while the Chairman of the Board should work with the CEO and the rest of the Board to set the strategic direction for the Company and provide guidance to, and oversight of the CEO. The Chairman also sets the agenda for Board meetings and presides over them. Because the Board currently has no formal Chairman, the Board has maintained the Lead Independent Director position. The Lead Independent Director position was created for those situations where the Chairman is not independent to serve as an independent balance to the Chairman and as the principal liaison between the Chairman and the independent directors.

The Lead Independent Director, Dr. Grais, has performed many of the duties of the Chair during the period that the Chairmanship has been vacant. In this capacity, Dr. Grais, among other things, calls and presides over Board meetings, including meetings of the independent directors, and sets meeting agendas. In this role, Dr. Grais can effectively coordinate between the Board and management regarding risk management issues and the implementation of appropriate responses, and can help ensure the effective independent functioning of the Board in its oversight responsibilities. Accordingly, the Lead Independent Director has substantial ability to shape the work of the Board when performing many of the duties of the Chairman.

ROLE OF THE BOARD IN RISK OVERSIGHT AND RISK MANAGEMENT

One of the Board's key functions is informed oversight of the Company's risk management process. The Board does not have a standing risk management committee, but rather administers this oversight function directly through the Board as a whole, as well as through various Board standing committees that address risks inherent in their respective areas of oversight. In particular, while the Board is responsible for monitoring and assessing strategic risk exposure, the audit committee has the responsibility to consider and discuss the major financial risk exposures and the steps management has taken to monitor and control these exposures, including guidelines and policies to govern the process by which risk assessment and management is undertaken. The audit committee also monitors compliance with legal and regulatory requirements, in addition to oversight of the performance of ARCA's accounting and financial reporting processes. The nominating and corporate governance committee monitors the effectiveness of the corporate governance guidelines, including whether they are successful in preventing illegal or improper liability-creating conduct. The compensation committee assesses and monitors whether any compensation policies and programs have the potential to encourage excessive risk-taking. The entire Board and its Committees address risk management issues from time-to-time and at least annually meet with the employees responsible for risk management in the committees respective areas of oversight. Both the Board as a whole and the various standing committees receive periodic reports from the employees responsible for risk management, as well as incidental reports as matters may arise. It is the responsibility of the committee chairs to report findings regarding material risk exposures to the Board as quickly as possible.

MEETINGS OF THE BOARD OF DIRECTORS

The Board of Directors met eleven times during the 2013 fiscal year. The independent members of the Board met separately as a group in connection with each of the three regularly scheduled board meetings in 2013.

9.

INFORMATION REGARDING COMMITTEES OF THE BOARD OF DIRECTORS

The Board has three standing committees: an Audit Committee, a Compensation Committee, and a Nominating and Corporate Governance Committee. The following table provides membership and meeting information for fiscal year 2013, for each of the Board committees:

Name	Audit	Compensation	Nominating and Corporate Governance
Dr. Michael R. Bristow			
Dr. Jean-François Formela(1)		X	
Dr. John L. Zabriskie(2)	X	X	
Dr. Linda Grais(4)	X	X*	X
Dr. Raymond L. Woosley(5)	X	X	X*
Mr. Robert E. Conway(6)	X*	X	
Mr. Dan J. Mitchell(3)	X		X
Total meetings in fiscal 2013	4	2	2

- (1) On July 26, 2013, Dr. Formela resigned from the Board.
- (2) On November 19, 2013, Dr. Zabriskie resigned from the Board.
- (3) On February 11, 2014, Mr. Mitchell joined the Board.
- (4) On February 11, 2014, Ms. Grais resigned from the Audit Committee upon Mr. Mitchell's appointment.
- (5) On July 26, 2013, Dr. Woosley joined the Board.
- (6) On September 3, 2013, Mr. Conway joined the Board.

* Current Committee Chairperson.

Below is a description of each committee of the Board of Directors. Each of the committees has authority to engage legal counsel or other experts or consultants, as it deems appropriate to carry out its responsibilities. The Board of Directors has determined that each member of each committee meets the applicable NASDAQ rules and regulations regarding independence and that each member is free of any relationship that would impair his or her individual exercise of independent judgment with regard to the Company.

Audit Committee

The Audit Committee of the Board of Directors was established by the Board in accordance with Section 3(a)(58)(A) of the Securities Exchange Act of 1934, as amended (the Exchange Act), to oversee the Company's corporate accounting and financial reporting processes and audits of its financial statements. For this purpose, the Audit Committee performs several functions. The Audit Committee evaluates the performance of and assesses the qualifications of the independent registered public accounting firm; determines and approves the engagement of the independent registered public accounting firm; determines whether to retain or terminate the existing independent registered public accounting firm or to appoint and engage a new independent registered public accounting firm; reviews and approves the retention of the independent registered public accounting firm to perform any proposed permissible non-audit services; monitors the rotation of partners of the independent registered public accounting firm on the Company's audit engagement team as required by law; reviews and approves or rejects transactions between the company and any related persons; confers with management and the independent registered public accounting firm regarding the effectiveness of internal controls over financial reporting; establishes procedures, as required under applicable law, for the receipt, retention and treatment of complaints received by the Company regarding accounting, internal accounting controls or auditing matters and the confidential and anonymous submission by employees of

concerns regarding questionable accounting or auditing matters; and meets to review the Company's annual audited financial statements and quarterly financial statements with management and the independent registered public accounting firm, including a review of the Company's disclosures under Management's Discussion and Analysis of Financial Condition and Results of Operations. The Audit Committee is currently composed of three directors: Mr. Conway (chair), Mr. Mitchell and Dr. Woosley. The Audit Committee met four times during the fiscal year. The Audit Committee has adopted a written charter that is available to stockholders on the Company's website at www.arcabiopharma.com.

The Board of Directors reviews the NASDAQ listing standards definition of independence for Audit Committee members on an annual basis and has determined that all members of the Company's Audit Committee are independent (as independence is currently defined in Rule 5605(c)(2)(A)(i) and (ii) of the NASDAQ listing standards). The Board of Directors has also determined that Mr. Conway qualifies as an audit committee financial expert, as defined in applicable SEC rules. The Board made a qualitative assessment of Mr. Conway's level of knowledge and experience based on a number of factors, including his prior experience, business acumen and independence.

Report of the Audit Committee of the Board of Directors¹

The Audit Committee has reviewed and discussed the audited financial statements for the fiscal year ended December 31, 2013 with management of the Company. The Audit Committee has discussed with the independent registered public accounting firm the matters required to be discussed by Statement on Auditing Standards No. 61, as amended (AICPA, *Professional Standards*, Vol. 1, AU section 380), as adopted by the Public Company Accounting Oversight Board (PCAOB) in Rule 3200T. The Audit Committee has also received the written disclosures and the letter from the independent registered public accounting firm required by applicable requirements of the PCAOB regarding the independent registered public accounting firm's communications with the audit committee concerning independence, and has discussed with the independent registered public accounting firm the accounting firm's independence. Based on the foregoing, the Audit Committee has recommended to the Board of Directors that the audited financial statements be included in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2013.

Mr. Robert Conway
Mr. Dan Mitchell
Dr. Raymond Woosley

Compensation Committee

The Compensation Committee is currently composed of three directors: Mr. Robert Conway, Dr. Linda Grais (chair) and Dr. Raymond Woosley. All members of the Compensation Committee are independent, as independence is currently defined in Rule 5605(a)(2) of the NASDAQ listing standards. The Compensation Committee met four times during the fiscal year. The Compensation Committee has adopted a written charter that is available to stockholders on the Company's website at www.arcabiopharma.com.

The Compensation Committee of the Board of Directors acts on behalf of the Board to review, adopt and oversee the Company's compensation strategy, policies, plans and programs, including:

overseeing succession planning for senior management of the Company, including a review of the performance and advancement potential of current and future senior management and succession plans for each and recommending, as appropriate, the retention of potential succession candidates;

assessing the overall compensation structure of the Company and evaluating and recommending changes to the Company's compensation philosophies and strategies;

reviewing and approving performance-based compensation plans or programs, including establishing goals and targets, applicable to the Chief Executive Officer and other members of the

management team;

- ¹ The material in this report is not soliciting material, is not deemed filed with the Commission and is not to be incorporated by reference in any filing of the Company under the Securities Act or the Exchange Act, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

11.

administering, reviewing, and approving all executive compensation programs or plans, and all of the Company's incentive compensation and stock plans and awards thereunder of the Company, including amendments to the programs, plans or awards made thereunder; and

preparing and approving the Report of the Compensation Committee to be included as part of the Company's annual meeting proxy statement, to the extent required.

Compensation Committee Processes and Procedures

Typically, the Compensation Committee meets on a regular basis as it deems appropriate. The agenda for each meeting is usually developed by the Chair of the Compensation Committee. The Compensation Committee meets regularly in executive session. However, from time to time, various members of management and other employees as well as outside advisors or consultants may be invited by the Compensation Committee to make presentations, to provide financial or other background information or advice or to otherwise participate in Compensation Committee meetings. The Chief Executive Officer may not participate in, or be present during, any deliberations or determinations of the Compensation Committee regarding his compensation or individual performance objectives. The Compensation Committee has the sole authority to retain compensation consultants to assist in its evaluation of executive and director compensation, including the authority to approve the consultant's reasonable fees and other retention terms.

In June 2013, the Company's Compensation Committee reviewed the Company's executive compensation in light of general market conditions in the life science industry. As part of this review process, the Compensation Committee identified a peer group of biotechnology companies that it viewed as having a similar profile to ARCA. This peer group includes Alexza Pharmaceuticals, Affymax, Amicus Therapeutics, Inc., Palatin Technologies, Inc., Celsion Corp., NovaBay Pharmaceuticals, Galena Biopharma, Inc., Northwest Biotherapeutics, Inc., and Discovery Laboratories, Inc.

In setting 2013 base salary and cash bonus award amounts for the ARCA Named Executive Officers, the Compensation Committee analyzed the peer group data and targeted cash compensation in the 50th percentile of cash compensation paid to similarly situated executive officers within the peer group. The Board recommended and approved a base salary of \$272,950 for Dr. Bristow, a base salary of \$265,000 for Mr. Wheeler and a base salary of \$266,770 for Mr. Ozeroff for the fiscal year 2013. In early 2014, the Board recommended and approved three percent increases to executive officer salaries for the fiscal year 2014. After the Company had successfully completed its May/June 2013 financing, the Compensation Committee recommended and the Board approved bonuses based on previous performance for the ARCA Named Executive Officers and a salary increase for the Chief Financial Officer.

Historically, the Compensation Committee has made most of the significant adjustments to annual compensation, determined bonus and equity awards and established new performance objectives at one or more meetings held during the first quarter of the year. However, the Compensation Committee also considers matters related to individual compensation, such as compensation for new executive hires, as well as high-level strategic issues, such as the efficacy of the Company's compensation strategy, potential modifications to that strategy and new trends, plans or approaches to compensation, at various meetings throughout the year. Generally, the Compensation Committee's process comprises two related elements: the determination of compensation levels and the establishment of performance objectives for the current year.

The Committee reviews and approves the compensation of the Chief Executive Officer and the other executive officers of the Company, including annual base salaries, annual and long-term incentive or bonus awards, employment agreements, and severance and change in control agreements/provisions, in each case as, when and if appropriate, and any special or supplemental benefits. For executives other than the Chief Executive Officer, the Compensation Committee solicits and considers evaluations and recommendations submitted to the Committee by the Chief

Executive Officer. The Committee evaluates the performance of the Chief Executive Officer in light of Company and individual goals and objectives, and makes appropriate recommendations for improving performance. In performing the evaluation, the Chair of the Committee may solicit comments from the other non-employee members of the Board and lead the Board in an overall review of the Chief Executive Officer's performance in an executive session of non-employee Board members. If the compensation for the Chief Executive Officer or any other executive officer is governed by an employment agreement, the Committee approves such employment agreement and any amendments thereto.

12.

For all executives as part of its deliberations, the Compensation Committee may review and consider, as appropriate, materials such as financial reports and projections, operational data, tax and accounting information, tally sheets that set forth the total compensation that may become payable to executives in various hypothetical scenarios, executive and director stock ownership information, company stock performance data, analyses of historical executive compensation levels and current Company-wide compensation levels.

Nominating and Corporate Governance Committee

The Nominating and Corporate Governance Committee of the Board of Directors is responsible for identifying, reviewing and evaluating candidates to serve as directors of the Company (consistent with criteria approved by the Board), reviewing and evaluating incumbent directors, recommending to the Board candidates for election to the Board of Directors, making recommendations to the Board regarding compensation for Board and Committee service, making recommendations to the Board regarding the membership of the committees of the Board, assessing the performance of the Board and developing a set of corporate governance principles for the Company. The Nominating and Corporate Governance Committee is currently composed of three directors, Dr. Grais, Mr. Mitchell and Dr. Woosley. All members of the Nominating and Corporate Governance Committee in 2013 were independent (as independence is currently defined in Rule 5605(a)(2) of the NASDAQ listing standards). The Nominating and Corporate Governance Committee met two times during the 2013 fiscal year. The Nominating and Corporate Governance Committee has adopted a written charter that is available to stockholders on the Company's website and www.arcabiopharma.com.

The Board has adopted a process for identifying and evaluating director nominees, including stockholder nominees. Before recommending an individual to the Board for Board membership, the Nominating and Corporate Governance Committee canvasses its members and the Company's management team for potential candidates for the Board of Directors. The Nominating and Corporate Governance Committee also uses its network of contacts to identify potential candidates and, if it deems appropriate, may also engage a professional search firm. The Nominating and Corporate Governance Committee will consider stockholders' recommendations for nominees to serve as director if notice is timely received by the Secretary of the Company. Candidates nominated by stockholders will be evaluated in the same manner as other candidates. The Nominating and Corporate Governance Committee keeps the Board apprised of its discussions with potential nominees, and the names of potential nominees received from its current directors, management, and stockholders, if the stockholder notice of nomination is timely made.

Although the Board has not adopted a fixed set of minimum qualifications for candidates for Board membership, the Nominating and Corporate Governance Committee generally considers several factors in its evaluation of a potential member, such as the candidate's education, professional background and field of expertise including industry or academic experience in the pharmaceutical and biotechnology fields, experience in corporate governance and management, the reasonable availability of the potential member to devote time to the affairs of the Company, as well as any other criteria deemed relevant by the Board or the Nominating and Corporate Governance Committee. However, the Nominating and Corporate Governance Committee retains the right to modify these qualifications from time to time. Candidates for director nominees are reviewed in the context of the current composition of the Board, the operating requirements of the Company and the long-term interests of stockholders. In conducting this assessment, the Nominating and Corporate Governance Committee typically considers diversity, age, skills and such other factors as it deems appropriate given the current needs of the Board and the Company, to maintain a balance of knowledge, experience and capability. The Nominating and Corporate Governance Committee believes it is essential that Board members come from a variety of backgrounds and experiences.

In the case of incumbent directors whose terms of office are set to expire, the Nominating and Corporate Governance Committee reviews these directors' overall contributions to the Company and the Board during their terms, including level of attendance, level of participation, quality of performance and contribution to the Board's responsibilities and actions, and any relationships and transactions that might impair the directors' independence. In the case of new

director candidates, the Nominating and Corporate Governance Committee also determines whether the nominee is independent for NASDAQ and SEC purposes, which determination is based upon applicable

13.

NASDAQ listing standards, applicable SEC rules and regulations and the advice of counsel, if necessary. The Nominating and Corporate Governance Committee conducts any appropriate and necessary inquiries into the backgrounds and qualifications of possible candidates after considering the function and needs of the Board. The Nominating and Corporate Governance Committee meets to discuss and consider the candidates' qualifications and then determines whether to recommend a nominee to the Board by majority vote.

Stockholders who wish to recommend individuals for consideration by the Nominating and Corporate Governance Committee to become nominees for election to the Board of Directors may do so by delivering a written recommendation to the Nominating and Corporate Governance Committee addressed to the Corporate Secretary, between 60 and 90 days before the one year anniversary date of ARCA's last Annual Meeting of Stockholders. Recommendations must include the full name of the proposed nominee, a description of the proposed nominee's business experience for at least the previous five years, complete biographical information, a description of the proposed nominee's qualifications as a director, and a representation that the recommending stockholder is a beneficial or record owner of ARCA's stock. Any such submission must be accompanied by the written consent of the proposed nominee to be named as a nominee and to serve as a director if elected. To date, the Nominating and Corporate Governance Committee has not rejected a timely director nominee from a stockholder.

In 2013, the Nominating and Corporate Governance Committee did not pay any fees to assist in the process of identifying or evaluating director candidates.

STOCKHOLDER COMMUNICATIONS WITH THE BOARD OF DIRECTORS

Stockholders who wish to communicate with the Board may do so by e-mail by using the following email address: directors@arcabiopharma.com; or by mail by following the directions as set forth on ARCA's website at www.arcabiopharma.com, under the section titled "Corporate Governance" and the subsection titled "Governance Documents".

CODE OF ETHICS

The Company has adopted the ARCA biopharma, Inc. Code of Business Conduct and Ethics that applies to all officers, directors and employees. The Code of Business Conduct and Ethics is available on the Company's website at www.arcabiopharma.com. If the Company makes any substantive amendments to the Code of Business Conduct and Ethics or grants any waiver from a provision of the Code of Business Conduct and Ethics to any executive officer or director, the Company will promptly disclose the nature of the amendment or waiver on its website and file any current report on Form 8-K required by applicable law or NASDAQ listing standards.

PROPOSAL 2

RATIFICATION OF SELECTION OF THE INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Audit Committee of the Board of Directors has selected KPMG LLP (KPMG) as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2014 and has further directed that management submit the selection of the independent registered public accounting firm for ratification by the stockholders at the Annual Meeting. KPMG has audited the Company's fiscal year financial statements since 2009. Representatives of KPMG are expected to be present at the Annual Meeting. They will have an opportunity to make a statement if they so desire and will be available to respond to appropriate questions.

Neither the Company's Bylaws nor other governing documents or law require stockholder ratification of the selection of KPMG as the Company's independent registered public accounting firm. However, the Board is submitting the selection of KPMG to the stockholders for ratification as a matter of good corporate practice. If the stockholders fail to ratify the selection, the Audit Committee of the Board will reconsider whether or not to retain that firm. Even if the selection is ratified, the Audit Committee of the Board in its discretion may direct the appointment of a different independent registered public accounting firm at any time during the year if they determine that such a change would be in the best interests of the Company and its stockholders.

The affirmative vote of the holders of a majority of the shares present in person or represented by proxy and entitled to vote at the Annual Meeting will be required to ratify the selection of KPMG LLP. Broker non-votes are counted towards a quorum, but are not counted for any purpose in determining whether this matter has been approved.

PRINCIPAL ACCOUNTANT FEES AND SERVICES

The following table represents aggregate fees billed, or expected to be billed, to the Company for the fiscal year ended December 31, 2013 and December 31, 2012 by KPMG, the Company's independent registered public accounting firm.

	Fiscal Year Ended 2013	Fiscal Year Ended 2012
Audit Fees (1)	\$ 195,080	\$ 147,875
Audit-related Fees		
Tax Fees		
All Other Fees		
Total Fees	\$ 195,080	\$ 147,875

- (1) Audit Fees include fees for the (i) audit of the consolidated financial statements included in our Form 10-K for our fiscal years ended December 31, 2013 and December 31, 2012, (ii) review of interim consolidated financial statements included on Forms 10-Q and (iii) attest, consent and review services normally provided by the accountant in connection with SEC filings.

All fees described above were approved by the Audit Committee.

PRE-APPROVAL POLICIES AND PROCEDURES

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The above services performed by the independent registered public accounting firm were pre-approved in accordance with the pre-approval policy and procedures adopted by the Audit Committee. This policy describes the permitted audit, audit-related, tax, and other services that the independent registered public accounting firm may perform. The policy also requires that the independent registered public accounting firm provide in writing:

15.

an annual description of all relationships between the independent registered public accounting firm and the client that may reasonably be thought to bear on independence;

confirm that, in the independent registered public accounting firm's professional judgment, the independent registered public accounting firm is independent of the client under SEC requirements;

discuss with the Audit Committee the independent registered public accounting firm's independence and the potential effects on its independence of performing any non-audit related services.

The services expected to be performed by the independent registered public accounting firm during the subsequent fiscal year are presented to the Audit Committee for pre-approval. Any pre-approval describes in writing the particular service or category of services.

Requests for audit, audit-related, tax, and other services not contemplated by those pre-approved services must be submitted to the Audit Committee for specific pre-approval. Generally, pre-approval is considered at the Audit Committee's regularly scheduled meetings. However, the authority to grant specific pre-approval between meetings, as necessary, has been delegated to the chairman of the Audit Committee. In the event that the chairman is not available, the other two Audit Committee members together have the authority to grant specific pre-approval between meetings. The chairman or the other member must update the Audit Committee at the next regularly scheduled meeting of any services that were granted specific pre-approval.

The report of the independent registered public accounting firm, KPMG, on the consolidated financial statements of the Company for the year ended December 31, 2013, included in Item 8. Financial Statements and Supplementary Data of our Form 10-K, filed with the SEC on March 20, 2014, states that the Company's recurring losses from operations, dependence upon raising additional funds from strategic transactions, sales of equity, and/or issuance of debt, and the uncertainty surrounding the Company's ability to consummate such transactions, raise substantial doubt about the Company's ability to continue as a going concern. KPMG's report on the consolidated financial statements for the past two years contained no adverse opinion or disclaimer of opinion and was not qualified as to audit scope or accounting principles.

The Audit Committee pre-approved all audit related, tax and other services rendered in 2013 and did not rely on the waiver of pre-approval requirement provided by paragraph (c)(7)(i)(C) of Rule 2-01 of Regulation S-X promulgated under the Exchange Act.

THE BOARD OF DIRECTORS RECOMMENDS

A VOTE IN FAVOR OF PROPOSAL 2.

**SECURITY OWNERSHIP OF
CERTAIN BENEFICIAL OWNERS AND MANAGEMENT**

Principal Stockholders

The following table sets forth certain information regarding the ownership of the Company's Common Stock as of March 31, 2014 by: (i) each director and nominee for director; (ii) each of our named executive officers; (iii) all executive officers and directors of the Company as a group; and (iv) all those known by the Company to be beneficial owners of more than five percent of its Common Stock. Unless otherwise noted below, the address of each beneficial owner listed on the table is c/o ARCA biopharma, Inc., 11080 CirclePoint Road, Suite 140, Westminster, Colorado, 80020.

We have determined beneficial ownership in accordance with the rules of the Securities and Exchange Commission, or the SEC. Except as indicated by the footnotes below, we believe, based on the information furnished to us, that the persons and entities named in the table below have sole voting and investment power with respect to all shares of common stock that they beneficially own, subject to applicable community property laws. The table is based upon information supplied by officers, directors and principal stockholders and Schedules 13G or 13D, Form 4s or other ownership reports filed with the SEC. For purposes of this table, certain of our outstanding warrants that may be exercisable for fractional shares have been rounded down to the nearest whole number.

In computing the number of shares of common stock beneficially owned by a person and the percentage ownership of that person, we deemed outstanding shares of common stock subject to options or warrants held by that person that are currently exercisable or exercisable within 60 days of March 31, 2014. We did not deem these shares outstanding, however, for the purpose of computing the percentage ownership of any other person.

The percentages below are based on 20,979,840 shares of our common stock outstanding as of March 31, 2014.

Beneficial Owner	Shares Beneficially Owned	Percentage of Shares Beneficially Owned
Directors and Named Executive Officers		
Michael R. Bristow, M.D., Ph.D. (1)	788,095	3.70%
Patrick M. Wheeler (2)	33,881	*
Christopher D. Ozeroff (3)	40,002	*
Linda Grais, M.D. (4)	20,777	*
Robert E. Conway (5)	8,829	*
Raymond L. Woosley (6)	10,574	*
Dan J. Mitchell (7)	6,094	*
All current directors and executive officers as a group (7 persons) (8)	908,252	4.24%
5% Stockholders		
Riley McCormack(9)	3,000,000	14.30%
Entities affiliated with Sabby Healthcare Volatility Master Fund, Ltd. (10)	2,510,779	11.97%

- * Represents beneficial ownership of less than 1% of our Common Stock.
- (1) Includes the following owned by (i) Investocor Trust: (a) 139,082 shares and (b) 104,311 shares issuable upon the exercise of warrants, which warrants are immediately exercisable. Dr. Bristow is the sole trustee of Investocor Trust; (ii) NFS as Custodian for Michael Bristow's IRA: (a) 178,215 shares and (b) 124,750 shares issuable upon the exercise of warrants, which warrants are immediately exercisable; and (iii) options to purchase 77,908 shares that are exercisable within 60 days of March 31, 2014.
 - (2) Includes options to purchase 33,325 shares that are exercisable within 60 days of March 31, 2014.
 - (3) Includes (a) options to purchase 14,531 shares that are exercisable within 60 days of March 31, 2014, and (b) 7,934 shares issuable upon the exercise of warrants, which warrants are immediately exercisable.

- (4) Includes options to purchase 20,777 shares that are exercisable within 60 days of March 31, 2014.
- (5) Includes options to purchase 8,829 shares that are exercisable within 60 days of March 31, 2014.
- (6) Includes options to purchase 10,574 shares that are exercisable within 60 days of March 31, 2014.
- (7) Includes options to purchase 6,094 shares that are exercisable within 60 days of March 31, 2014.
- (8) See Notes (1) through (7) above.
- (9) Based solely upon a Form 4 filed with the SEC on February 4, 2014. The address for Riley McCormack is 2515 Alhambra Circle, Coral Gables, Florida, 33134.
- (10) Based solely upon a Schedule 13G filed with the SEC on January 16, 2014. The address for Sabby Healthcare Volatility Master Fund, Ltd. is c/o Ogier Fiduciary Services (Cayman) Limited, 89 Nexus Way, Camana Bay, Grand Cayman KY1-9007, Cayman Islands.

SECTION 16(A) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Section 16 of the Securities Exchange Act of 1934, as amended (the Exchange Act) requires the Company s directors and executive officers, and persons who own more than 10% of its common stock, to file with the SEC initial reports of ownership and reports of changes in ownership of common stock of the Company. Such persons are required by SEC regulation to furnish us with copies of all Section 16(a) forms that they file.

To the Company s knowledge, based solely upon its review of the copies of such reports furnished to it and written representations that no other reports were required, during the fiscal year ended December 31, 2013, all Section 16(a) filing requirements applicable to its officers, directors and ten percent beneficial owners were complied with.

EXECUTIVE OFFICERS

Set forth below is information regarding each of the executive officers as of March 31, 2014.

Name	Age	Position
Michael R. Bristow, M.D., Ph.D.*	69	President and Chief Executive Officer
Patrick M. Wheeler	44	Chief Financial Officer
Christopher D. Ozeroff	55	Secretary, Senior Vice President and General Counsel

* Also serves as a director.

Michael R. Bristow, M.D., Ph.D. Dr. Bristow's biography is included under Nominees for Election for a Three-Year Term Expiring at the 2017 Annual Meeting above.

Patrick M. Wheeler. Mr. Wheeler has served as the Company's Chief Financial Officer since May 21, 2010. Previously, he held the position of Acting Chief Financial Officer since December 7, 2009, and he held the position of Senior Vice President, Finance of the Company since our merger with Nuvelo, Inc. in January 2009. Mr. Wheeler joined ARCA Colorado in July 2006 as Vice President, Finance and held the position of Senior Vice President, Finance from February 2008 until the completion of the merger with Nuvelo. Prior to his time with ARCA Colorado, he served as Director of Finance for Dharmacon, Inc., a Fisher Scientific, Inc. life science company, from June 2003 to July 2006. Mr. Wheeler has a B.A. in economics from the University of Colorado and an M.B.A. from Regis University.

Christopher D. Ozeroff. Mr. Ozeroff has served as the Company's Senior Vice President since December 2009. Additionally, Mr. Ozeroff has served as the Company's General Counsel and Secretary since January 2009. Previously, Mr. Ozeroff served as the Company's Executive Vice President of Business Development, General Counsel and Secretary since the merger with Nuvelo. Before the merger, Mr. Ozeroff was a co-founder of ARCA Colorado in September 2004, and had served as its Executive Vice President of Business Development, General Counsel and Secretary since that date. Prior to joining the Company, Mr. Ozeroff was a partner with the law firm of Hogan & Hartson L.L.P., where he practiced in such areas as finance, acquisitions, public offerings, and licensing. Mr. Ozeroff completed his undergraduate degree at Stanford University and his law degree at the University of Chicago Law School.

Executive Compensation

The following table shows for the fiscal years ended December 31, 2012 and December 31, 2013, compensation awarded to, paid to, or earned by the Company's principal executive officers and its other named executive officers as of December 31, 2013, collectively, the Named Executive Officers:

SUMMARY COMPENSATION TABLE FOR FISCAL 2013 AND 2012

Name and Principal Position	Year	Salary (\$)(2)	Option Grants (\$)(1)	Restricted Stock Units (\$)(1)	Bonus (\$)	All Other Compensation (\$)	Total (\$)
Michael R. Bristow, President and Chief Executive Officer	2013	259,303	297,164	172,500	70,000(3)	13,172	872,189
	2012	246,705			60,050(4) 13,304	9,868	269,877
Patrick M. Wheeler, Chief Financial Officer	2013	232,153	86,006	103,500	60,000(3) 46,650(4)	8,471	536,780
	2012	200,157				8,006	208,163
Christopher D. Ozeroff, Secretary, Senior Vice President and General Counsel	2013	253,431	44,804	103,500	35,000(3) 35,200(4)	4,802	476,737
	2012	241,119				4,606	245,725

- (1) The amounts reported under "Option Grants" and "Restricted Stock Units" in the above table reflect the grant date fair value of these awards as determined in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718, Compensation - Stock Compensation, excluding the effects of estimated forfeitures. The value of stock option and restricted stock unit awards was estimated using the Black-Scholes option-pricing model. The valuation assumptions used in the valuation of option grants and restricted stock units may be found in Note 9 to the Company's consolidated financial statements included in our annual report on Form 10-K for the year ended December 31, 2013 and filed with the SEC on March 20, 2014.
- (2) The amounts reported under "Salary" in the above table represent the actual amounts paid during the calendar year. Because the Company's actual pay dates do not always coincide with the first and last days of the year, these amounts may differ from the base salary amounts authorized by the Company's Board of Directors and described in the narrative that follows.
- (3) On June 13, 2013, the Board approved cash bonuses in recognition of past efforts. A portion of such efforts occurred in 2012 but, for purposes of the table set forth above, the entirety of such bonuses have been included with respect to 2013.
- (4) Represents cash bonuses earned under the Performance Program or the 2013 Bonus Plan. Cash bonuses earned in 2013 were paid in 2014. See "Executive Compensation" for descriptions of the 2013 Bonus Plan.

Narrative Disclosure to Summary Compensation Table*Employment Agreements or Arrangements*

Michael R. Bristow, M.D., Ph.D. Dr. Bristow serves as the Company's President and Chief Executive Officer under an Employment and Retention Agreement that was amended and restated as of June 4, 2008 and further amended pursuant to a Waiver and Amendment Agreement executed as of March 30, 2012. Pursuant to such employment

agreement, Dr. Bristow is permitted to continue his academic work for the University of Colorado Health Sciences Center and for the Cardiovascular Institute, so long as it does not interfere with his duties as President and Chief Executive Officer of ARCA.

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The Company's Board of Directors approved a 2013 base salary of \$272,950 for Dr. Bristow, effective on June 24, 2013. Dr. Bristow's salary is subject to annual increases if approved by the Company's Board of Directors or Compensation Committee and he is eligible to receive an annual bonus as determined by the Board of Directors or Compensation Committee in its sole discretion. On June 13, 2013, the Board approved a cash bonus of \$70,000 for Dr. Bristow. The Board determined the bonus would be paid in recognition of his past efforts and increased his salary to the level that was in place prior to Dr. Bristow's 2011 voluntary salary reduction which was implemented to save the Company's available capital. The Board also approved the reinstatement of a severance package for Dr. Bristow which would require the Company to make severance payments, in an amount equal to 6 months of his base salary, to Dr. Bristow in the event his employment is terminated under certain situations, as summarized below.

On February 27, 2014, the Board approved a cash bonus of \$60,050 for Dr. Bristow. The cash bonus was earned under the Performance Program or the 2013 Bonus Plan. See Executive Compensation for descriptions of the 2013 Bonus Plan. The Board also approved a 2014 base salary of \$281,139 for Dr. Bristow.

If the Company terminates Dr. Bristow's employment without cause, or if Dr. Bristow terminates his employment with good reason (as these terms are defined in his employment agreement), the Company has agreed to pay Dr. Bristow a severance payment equivalent to (i) 6 months of his base salary (if such termination occurs on the same day as or within thirteen months after a change of control of the Company), (ii) a pro rata portion of any bonus compensation under any employee bonus plan that has been approved by the Board of Directors payable to him for the fiscal year in which his employment terminated to be paid at the same time that such incentive bonus would have been paid had the termination not occurred, and (iii) reimbursement to cover out-of-pocket costs to continue group health insurance benefits under COBRA for 6 months, whether he elects or is eligible to receive COBRA (provided, that even if he does not elect or is not eligible to receive COBRA, he will receive the equivalent of such out-of-pocket expenses paid by him not to exceed the costs that the benefits would equal under COBRA if he were so eligible). In addition, ARCA may elect in its sole discretion, to pay additional severance equal to up to 6 months of base salary, which additional payment would extend the covenants and obligations under Dr. Bristow's Employee Intellectual Property, Confidentiality and Non-Compete Agreement for such additional period. The severance payment is conditioned on the execution by Dr. Bristow of a legal release in a form acceptable to the Company. A termination for cause includes willful misconduct, gross negligence, theft, fraud, or other illegal or dishonest conduct, any of which are considered to be materially harmful to the Company; refusal, unwillingness, failure, or inability to perform material job duties or habitual absenteeism; or violation of fiduciary duty, violation of any duty of loyalty, or material breach of any material term of the employment agreement or the Employee Intellectual Property, Confidentiality and Non-Compete Agreement, or any other agreement, with the Company. Good reason includes a relocation of normal work location greater than 30 miles; a decrease in current base salary by more than 15%, with certain exceptions; and the Company's unilateral decision to significantly and detrimentally reduce Dr. Bristow's job responsibilities.

Patrick M. Wheeler. Mr. Wheeler serves as the Company's Chief Financial Officer under an Employment Agreement dated February 11, 2009, as amended pursuant to a Waiver and Amendment Agreement executed as of March 30, 2012. Under his employment agreement, Mr. Wheeler is entitled to receive an annual base salary of \$215,000, subject to annual increases if approved by the Company's Board of Directors or Compensation Committee and is eligible to receive an annual bonus as determined by the Board of Directors or Compensation Committee in its sole discretion.

The Company's Board of Directors approved a 2013 base salary of \$265,000 for Mr. Wheeler, effective on June 24, 2013. Mr. Wheeler's salary is subject to annual increases if approved by the Company's Board of Directors or Compensation Committee and he is eligible to receive an annual bonus as determined by the Board of Directors or Compensation Committee in its sole discretion. On June 13, 2013, the Board approved a cash bonus of \$60,000 for Mr. Wheeler. The Board determined the bonus would be paid in recognition of his past efforts and increased his salary to the level that was in place prior to Mr. Wheeler's 2011 voluntary salary reduction which was implemented to save the Company's available capital. The Board also approved the reinstatement of a severance package for Mr. Wheeler which would require the Company to make severance payments, in an amount equal to 6 months of his base salary, to

Mr. Wheeler in the event his employment is terminated under certain situations, as summarized below.

On February 27, 2014, the Board approved a cash bonus of \$46,650 for Mr. Wheeler. The cash bonus was earned under the Performance Program or the 2013 Bonus Plan. See Executive Compensation for descriptions of the 2013 Bonus Plan. The Board also approved a 2014 base salary of \$268,975 for Mr. Wheeler.

If the Company terminates Mr. Wheeler's employment without cause, or if Mr. Wheeler terminates his employment with good reason (as these terms are defined in his employment agreement), the Company has agreed to pay Mr. Wheeler a severance payment equivalent to (i) 6 months of his base salary (if such termination occurs on the same day as or within thirteen months after a change of control of the Company), (ii) a pro rata portion of any bonus compensation under any employee bonus plan that has been approved by the Board of Directors payable to him for the fiscal year in which his employment terminated to be paid at the same time that such incentive bonus would have been paid had the termination not occurred, and (iii) reimbursement to cover out-of-pocket costs to continue group health insurance benefits under COBRA for 6 months, whether he elects or is eligible to receive COBRA (provided, that even if he does not elect or is not eligible to receive COBRA, he will receive the equivalent of such out-of-pocket expenses paid by him not to exceed the costs that the benefits would equal under COBRA if he were so eligible). In addition, ARCA may elect in its sole discretion, to pay additional severance equal to up to 6 months of base salary, which additional payment would extend the covenants and obligations under Mr. Wheeler's Employee Intellectual Property, Confidentiality and Non-Compete Agreement for such additional period. The severance payment is conditioned on the execution by Mr. Wheeler of a legal release in a form acceptable to the Company. A termination for cause includes willful misconduct, gross negligence, theft, fraud, or other illegal or dishonest conduct, any of which are considered to be materially harmful to the Company; refusal, unwillingness, failure, or inability to perform material job duties or habitual absenteeism; or violation of fiduciary duty, violation of any duty of loyalty, or material breach of any material term of the employment agreement or the Employee Intellectual Property, Confidentiality and Non-Compete Agreement, or any other agreement, with the Company. Good reason includes a relocation of normal work location greater than 30 miles; a decrease in current base salary by more than 15%, with certain exceptions; and the Company's unilateral decision to significantly and detrimentally reduce Mr. Wheeler's job responsibilities.

Christopher D. Ozeroff. Mr. Ozeroff serves as the Company's Senior Vice President and General Counsel under an Employment and Retention Agreement that was amended and restated as of June 12, 2008 and further amended pursuant to a Waiver and Amendment Agreement executed as of March 30, 2012.

Under his employment agreement, Mr. Ozeroff is entitled to receive an annual base salary of \$259,000, subject to annual increases if approved by the Company's Board of Directors or Compensation Committee and is eligible to receive an annual bonus as determined by the Board of Directors or Compensation Committee in its sole discretion.

The Company's Board of Directors approved a 2013 base salary of \$266,770 for Mr. Ozeroff, effective on June 24, 2013. Mr. Ozeroff's salary is subject to annual increases if approved by the Company's Board of Directors or Compensation Committee and he is eligible to receive an annual bonus as determined by the Board of Directors or Compensation Committee in its sole discretion. On June 13, 2013, the Board approved a cash bonus of \$35,000 for Mr. Ozeroff. The Board determined the bonus would be paid in recognition of his past efforts and increased his salary to the level that was in place prior to Mr. Ozeroff's 2011 voluntary salary reduction which was implemented to save the Company's available capital. The Board also approved the reinstatement of a severance package for Mr. Ozeroff which would require the Company to make severance payments, in an amount equal to 6 months of his base salary, to Mr. Ozeroff in the event his employment is terminated under certain situations, as summarized below.

On February 27, 2014, the Board approved a cash bonus of \$35,200 for Mr. Ozeroff. The cash bonus was earned under the Performance Program or the 2013 Bonus Plan. See Executive Compensation for descriptions of the 2013 Bonus Plan. The Board also approved a 2014 base salary of \$274,773 for Mr. Ozeroff.

If the Company terminates Mr. Ozeroff's employment without cause, or if Mr. Ozeroff terminates his employment with good reason (as these terms are defined in his employment agreement), the Company has agreed to pay Mr. Ozeroff a severance payment equivalent to (i) 6 months of his base salary (if such termination occurs on the same day as or within thirteen months after a change of control of the Company), (ii) a pro rata portion of any bonus compensation under any employee bonus plan that has been approved by the Board of Directors payable to him for the fiscal year in which his employment terminated to be paid at the same time that such incentive bonus would have been

paid had the termination not occurred, and (iii) reimbursement to cover out-of-pocket costs to continue group health insurance benefits under COBRA for 6 months, whether he elects or is eligible to receive COBRA (provided, that even if he does not elect or is not eligible to receive COBRA, he will receive the equivalent of such out-of-pocket expenses paid by him not to exceed the costs that the benefits would equal under COBRA if he were so eligible). In addition, ARCA may elect in its sole discretion, to pay additional severance equal to up to 6 months of base salary, which additional payment would extend the covenants and obligations under Mr. Ozeroff's

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Employee Intellectual Property, Confidentiality and Non-Compete Agreement for such additional period. The severance payment is conditioned on the execution by Mr. Ozeroff of a legal release in a form acceptable to the Company. A termination for cause includes willful misconduct, gross negligence, theft, fraud, or other illegal or dishonest conduct, any of which are considered to be materially harmful to the Company; refusal, unwillingness, failure, or inability to perform material job duties or habitual absenteeism; or violation of fiduciary duty, violation of any duty of loyalty, or material breach of any material term of the employment agreement or the Employee Intellectual Property, Confidentiality and Non-Compete Agreement, or any other agreement, with the Company. Good reason includes a relocation of normal work location greater than 30 miles; a decrease in current base salary by more than 15%, with certain exceptions; and the Company's unilateral decision to significantly and detrimentally reduce Mr. Ozeroff's job responsibilities.

Non-Equity Incentive Plan Compensation

In February 2007, the Compensation Committee and the Board of Directors of ARCA established a bonus structure for its entire executive team. The philosophy employed was to create incentives for the executive officers to achieve key corporate goals. The Compensation Committee retained discretion to change the bonus structure and the bonus payment amounts as it considered appropriate.

2013 Cash Bonus Plan

On February 27, 2014, the Board approved a cash bonus for every employee. The Compensation Committee determined the cash bonus was earned for attainment of the Company's 2013 Goals under its 2013 Cash Bonus Plan (the 2013 Goals). The 2013 Goals were as follows: (1) obtain funding for the GENETIC-AF phase 2B/3 clinical trial, (2) conclude the regulatory and planning process for the GENETIC-AF trial, (3) align partners for the potential patient enrollment in the GENETIC-AF trial during the first quarter of 2014 and (4) maintain a financial plan that maintains the listing of the Company's common stock on the NASDAQ Capital Market and supports the Company's financing goals. The 2013 bonuses which were paid were based on the Board's determination with respect to the Company's achievement of the 2013 Goals.

2014 Cash Bonus Plan

The Board has set corporate goals for 2014 (the 2014 Goals), which may be updated at the Board's discretion during 2014, to pay any award to any employee under the Company's 2014 Cash Bonus Plan, including executive officers.

The amount payable to each employee is targeted at such employee's target bonus percentage (TBP), but employees, including executive officers, may receive more or less than 100% of their TBP, based upon corporate goal achievement, individual performance and Board discretion.

To receive a cash bonus (if any), each individual employee must be actively employed by the Company, and in good standing, on December 31, 2014. Employees hired after January 1, 2014, will have their cash bonus (if any) prorated based on the percentage of time the employee worked at ARCA in 2014. The 2014 Goals are as follows: (1) obtain remaining Gencaro Phase 2B funding, (2) enroll the first patient in the GENETIC-AF trial during the first quarter of 2014, (3) enroll 25% of Phase 2B patients in the GENETIC-AF trial during 2014, and (4) deliver preclinical research and development discovery suitable for out-licensing, partnering or in-licensing.

Equity Incentive Compensation

The option grants and restricted stock units reported in the table above were granted to the Executives in 2013. Each of such option grants and restricted stock units were priced at \$1.38, the market closing price on the date of grant. The option grants vest in equal monthly installments through September 17, 2016 and have an acceleration provision in the

event of a Change of Control of the Company. The options are subject to the terms and conditions of the Company's 2013 Equity Incentive Plan, as amended (the 2013 Plan), and the Company's standard forms of Stock Option Agreement and Option Grant Notice for the Plan, copies of which were filed as Exhibit 10.4 to the Company's Current Report on Form 8-K filed on September 23, 2013. The restricted stock units vest in equal annual installments through September 17, 2016 and have an acceleration provision in the event of a Change of Control of the Company.

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On September 17, 2013, our stockholders approved the ARCA biopharma, Inc. 2013 Equity Incentive Plan (the 2013 Plan) at the 2013 Annual Meeting. The 2013 Plan is the successor to the Amended and Restated ARCA biopharma, Inc. 2004 Equity Incentive Plan (the 2004 Plan).

On September 17, 2013 the Board granted stock option awards and restricted stock units to certain employees, including Dr. Bristow, Mr. Wheeler and Mr. Ozeroff, pursuant to the 2013 Plan, as reported in the table above.

Upon a Change in Control of the Company, the vesting of these option grants and restricted stock units accelerates as follows:

a) Fifty percent (50%) of the unvested option shares become fully vested and exercisable upon the closing date of such Change in Control and any remaining unvested option shares continue to vest according to the original vesting schedule, and

b) Upon the one year anniversary of the closing of the Change of Control, or the Executive s involuntary termination, whichever occurs first, the remaining unvested option shares shall become fully vested and exercisable.

Other Elements of Executive Compensation Program

The remaining elements of the Company s executive compensation program, like its broader employee compensation programs, are intended to make the Company s overall compensation program competitive with those of its peer companies, keeping in mind the constraints imposed by the Company s reliance on capital markets as a primary source of cash. The remaining elements of the Company s executive compensation program, (401(k) Plan, Medical, Dental, and Vision Plans, Life and Disability Insurance) are available to all Company employees.

EQUITY COMPENSATION PLAN INFORMATION

The following table sets forth information as of December 31, 2013 for all of our equity compensation plans:

	No. of Securities to be Issued Upon Exercise of Outstanding Options or Upon Vesting of Restricted Stock Units (a)	Weighted Average Exercise Price or Award Value of Outstanding Options and Awards (\$) (b)	No. of Securities Remaining Available for Future Issuance Under Equity Compensation Plans Excluding Securities Reflected in Column(a) (c)
Equity compensation plans approved by security holders	843,442(1) 419,000(2)	3.76 1.39	
Total	1,262,442		1,093,131

- (1) Stock Options granted under the equity incentive plans.
- (2) Stock Awards granted under the equity incentive plans.

A description of the equity incentive plans we maintain is set forth in Note 9 to the Company's consolidated financial statements included in our annual report on Form 10-K for the year ended December 31, 2013 and filed with the SEC on March 20, 2014.

Compensation Risks

ARCA believes its approach to goal setting, setting of targets with payouts at multiple levels of performance, and evaluation of performance results assist in mitigating excessive risk-taking that could harm the value or reward poor judgment by its executives. Several features of the Company's programs reflect sound risk management practices. ARCA believes it has allocated compensation among base salary and short and long-term compensation target opportunities in such a way as to not encourage excessive risk-taking. The multi-year vesting of equity awards properly accounts for the time horizon of risk. Furthermore, the Company's compensation committee assesses and monitors whether any of ARCA's compensation policies and programs has the potential to encourage excessive risk-taking.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR END

The following table shows for the fiscal year ended December 31, 2013, certain information regarding outstanding equity awards at fiscal year end for the Named Executive Officers.

OUTSTANDING EQUITY AWARDS AT DECEMBER 31, 2013

A description of the equity incentive plans we maintain is set forth in Note 9 to the Company's consolidated financial statements included in our annual report on Form 10-K for the year ended December 31, 2013 and filed with the SEC on March 20, 2014.

Name	Option Awards			
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price (\$)	Option Expiration Date
Michael R. Bristow, President and Chief Executive Officer	4,147		33.42	1/23/2019
	2,666		17.82	2/18/2020
	4,305	695(1)	13.44	5/20/2021
	16,416	180,584(2)	1.38	9/16/2023
	7,152	78,673(2)	1.38	9/16/2023
Patrick Wheeler, Chief Financial Officer	1,391		5.40	8/3/2016
	278		10.80	5/3/2017
	4,035		11.16	2/12/2018
	3,333		17.40	6/25/2019
	974		33.42	1/23/2019
Christopher Ozeroff, Secretary, Senior Vice President and General Counsel	1,066		17.82	2/18/2020
	2,870	463(1)	13.44	5/20/2021
	6,821	75,035(2)	1.38	9/16/2023
	3,553	39,089(2)	1.38	9/16/2023

- (1) Options vest in monthly installments through May 20, 2014.
- (2) Options vest in monthly installments through September 17, 2016.

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Name	Stock Awards		
	Number of Securities Underlying Vested Awards (#) Vested	Number of Securities Underlying Unvested Awards (#) Unvested	Award Exercise Price (\$)
Michael R. Bristow, President and Chief Executive Officer		125,000(1)	1.38
Patrick Wheeler, Chief Financial Officer		75,000(1)	1.38
Christopher Ozeroff, Secretary, Senior Vice President and General Counsel		75,000(1)	1.38

(1) Restricted Stock Units vest in equal annual installments through September 17, 2016.

DIRECTOR COMPENSATION

The following table shows for the fiscal year ended December 31, 2013 certain information with respect to the compensation of all non-employee directors of the Company:

DIRECTOR COMPENSATION FOR FISCAL 2013 (1)

	Fees Earned or Paid in Cash (\$)	Non-Equity Nonqualified Incentive Plan Compensation (\$)	Deferred Compensation Earnings (\$)	All Other Compensation (\$)	Option Awards (\$)(2)	Total (\$)
Jean-Francois Formela, M.D. (3)						
Lind Grais, M.D. (4)	16,250				24,510	40,760
Burton E. Sobel, M.D. (5)						
John L. Zabriskie, Ph.D. (6)	18,750				24,510	43,260
Raymond L. Woosley, M.D.(7)	10,000				19,888	29,888
Robert E. Conway (8)	5,000				18,951	23,951

- (1) See Summary Compensation Table for disclosure related to Dr. Bristow.
- (2) The amounts reported under Option Awards in the above table reflect the aggregate grant date fair value of these awards as determined in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718, Compensation Stock Compensation, excluding the effects of estimated forfeitures. The value of stock option awards was estimated using the Black-Scholes option-pricing model. The valuation assumptions used in the valuation of option awards may be found in Note 9 to the Company's consolidated financial statements included in our annual report on Form 10-K for the year ended December 31, 2013 and filed with the SEC on March 20, 2014.
- (3) Only July 26, 2013 Dr. Formela resigned from the Company's Board of Directors. There were no outstanding option awards held by Dr. Formela at December 31, 2013.
- (4) The aggregate number of option awards outstanding at December 31, 2013 for Dr. Grais was 26,999, of which 15,221 shares were fully vested.
- (5) On May 2, 2013 Dr. Sobel passed away. Dr. Sobel held outstanding option awards to purchase an aggregate of 3,479 shares at December 31, 2013 and his estate has until May 2, 2014 to exercise the options.
- (6) Dr. Zabriskie resigned from the Company's Board of Directors on November 19, 2013. Dr. Zabriskie held outstanding option awards to purchase an aggregate of 30,282 shares at December 31, 2013.
- (7) Dr. Woosley joined the Company's Board of Directors on July 26, 2013. The aggregate number of option awards outstanding at December 31, 2013 for Dr. Woosley was 19,463 shares, of which 5,684 shares were fully vested.
- (8) Mr. Conway joined the Company's Board of Directors on September 3, 2013. The aggregate number of option awards outstanding at December 31, 2013 for Mr. Conway was 18,608, of which 3,939 shares were fully vested.
- In 2013, non-employee directors were compensated for their service on the Company's Board, as follows:

Each non-employee director was entitled to an annual retainer fee of \$30,000;

As additional compensation for their services, each non-employee director, upon joining the Board, was entitled to an initial grant of options to purchase 16,000 shares of the Company's common stock under the 2004 Plan and/or 2013 Plan (collectively, the Option Plans) and an annual grant of an additional 8,000 shares of the Company's common stock under the Option Plans;

The Audit Committee chair was entitled to receive an additional \$15,000 for service as the Audit Committee chair;

If a non-employee director served as the chair of any other Committee, that director was entitled to receive an additional \$10,000 per chair and the Chairman of the Board was entitled to receive an additional \$15,000;

Each of the members of the Audit Committee, other than the chair, was entitled to receive an additional \$5,000 for his or her service on the Audit Committee;

For membership on any other Committee, except for the chair of such Committee, a non-employee director was entitled to receive an additional \$5,000; and

The director designated as the Lead Independent Director was entitled to an annual fee of \$10,000. At the June 21, 2012 meeting of the Board of Directors, the Board agreed to forgo future Board payments for an indeterminate time as a measure to preserve the Company's available capital. At the June 13, 2013 meeting of the Board of Directors, the Board decided to reinstate payments for non-employee Directors starting in Q3 2013 at the compensation levels in place in 2012. On July 26, 2013, Drs. Grais and Zabriskie each were granted options to purchase 583 shares of the Company's common stock under the 2004 Plan, vesting over one year, in consideration of their service on the Board during 2013, and Dr. Woosley was granted options to purchase 1,250 shares of the Company's common stock under the 2004 Plan, vesting over three years, in consideration of Dr. Woosley joining the Board as a new member. The purchase price for these options was \$1.40, which was equal to the closing price of the Company's common stock on the date of the grant on the Nasdaq Global Market (Nasdaq). On September 3, Mr. Conway was granted options to purchase 1,250 shares of the Company's common stock under the 2004 Plan, vesting over three years, in consideration of his joining the Board as a new member. The purchase price for these options was \$1.33, which was equal to the closing price of the Company's common stock on the date of the grant on Nasdaq.

At the September 17, 2013 meeting of the Board of Directors, the Board decided to increase the equity compensation for non-employee Directors to bring the Director equity compensation levels within the range of comparable companies. Under the new plan, new Directors will receive a grant of options to purchase 16,000 shares of the Company's common stock upon joining the Board, vesting over three years, and an annual grant of options to purchase 8,000 shares of the Company's common stock, vesting over one year. In addition, the Board decided to award a joining grant to Dr. Grais and Dr. Zabriskie for their service on the Board. Accordingly, the Board granted Dr. Grais and Dr. Zabriskie options to purchase 16,000 shares of the Company's common stock under the 2013 Plan vesting over three years, and an additional grant of options to purchase 7,417 shares of common stock under the 2013 Plan vesting over one year. In addition, the Board granted Dr. Woosley options to purchase 18,213 shares of common stock (14,750 shares vest over three years, and 3,463 shares vest over five months) and Mr. Conway options to purchase 17,358 shares of common stock (14,750 shares vest over three years, and 2,608 vest over three months) under the 2013 Plan in order to align their equity compensation with the new director equity compensation levels. The purchase price for the options issued on September 17, 2013 was \$1.38, which was equal to the closing price of the Company's common stock on the date of the grant on Nasdaq. If the Director's service terminates in connection with or at any time following a change in control (for whatever reason), then any unexpired options that remain unvested shall become fully vested.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Transactions with the Company's President and Chief Executive Officer

The Company has entered into unrestricted research grants with the University of Colorado Foundation to support its President and Chief Executive Officer's, Dr. Bristow's, academic research laboratory at the University of Colorado. Funding of any unrestricted research grants is contingent upon the Company's financial condition, and can be deferred or terminated at the Company's discretion. Total expense under these arrangements for the years ended December 31, 2013 and 2012 was \$297,000 and \$63,000 respectively, and \$1.8 million from Inception through December 31, 2013. On July 19, 2013, the Audit Committee approved an unrestricted research grant commitment of approximately \$341,000 for the 2013/2014 academic year to the University of Colorado Foundation along with an additional unrestricted research grant of approximately \$53,000 in support of research activities and efforts performed during the 2012/2013 academic year.

Dr. Bristow was also an investor in connection with the Company's May 2013 public offering of its Series A Convertible Preferred Stock and warrants to purchase Common Stock, in which he purchased 781 shares of Series A Convertible Preferred Stock and accompanying warrants for a purchase price equal to \$160 per share.

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Certain Transactions With or Involving Related Persons

The following is a summary of transactions since January 1, 2012 to which we have been a party in which the amount involved exceeded the lesser of \$120,000 or one percent of the average of our total assets at fiscal years ended 2012 and 2013, and in which any of our executive officers, directors or holders of more than 5% of our capital stock, or any member of the immediate family of any of the foregoing persons, had or will have a direct or indirect material interest, other than compensation arrangements disclosed above under the heading *Executive Compensation*. The following tables summarize the purchases in these financing transactions of our common stock and warrants by our executive officers, directors or holders of more than 5% of our capital stock, or any member of the immediate family of any of the foregoing persons and their affiliated entities.

The October, 2012 Private Placement

On October 22, 2012, we entered into a subscription agreement with certain investors named in the table above pursuant to which we agreed to sell 137,530 units, with each unit consisting of one share of our common stock and a warrant to purchase 0.75 shares of our common stock. The warrants have an exercise price of approximately \$1.80, became exercisable on October 25, 2012 and expire five years after becoming exercisable, unless earlier terminated. On October 25, 2012, we closed the private placement and received gross proceeds of approximately \$325,000, before deduction of offering expenses. In connection with the closing of the private placement on October 25, 2012, we also entered into a registration rights agreement with the investors, pursuant to which we agreed to file a registration statement with the Securities Exchange Commission to register for resale the shares issued in the private placement and the shares issuable upon exercise of the warrants issued in the private placement. We filed such registration statement on Form S-3 (File No.333-186584) (the *PIPE Registration Statement*) on February 11, 2013, which became effective on February 14, 2013.

October 2012 PIPES Offering	Name of Purchaser	Dollars Invested	Post-Split Shares	Post-Split Warrant Shares
5% shareholder and Affiliate	Atlas Venture Fund VII, L.P.			
	Jean-François Formela, Director	\$ 125,000.00	52,896	39,672
5% shareholder and Affiliate	Investocor Trust			
	Dr. Michael Bristow, M.D., Ph.D., CEO and Director	\$ 125,000.00	52,896	39,672
Affiliate	Lansing Brown Investments, LLC			
	John L. Zabriskie, Ph.D. Director	\$ 50,000.00	21,159	15,868
Affiliate	Christopher D. Ozeroff	\$ 25,000.00	10,579	7,934

The December, 2012 Private Placement

On December 18, 2012, we entered into a subscription agreement with an investor named in the table above pursuant to which we agreed to sell 86,186 units, with each unit consisting of one share of our common stock and a warrant to purchase 0.75 shares of our common stock. The warrants have an exercise price of approximately \$2.34, became

exercisable on December 20, 2012 and expire five years after becoming exercisable, unless earlier terminated. On December 20, 2012, we closed the private placement and received gross proceeds of approximately \$250,000, before deduction of offering expenses. In connection with the closing of the private placement, on December 20, 2012, we also entered into a registration rights agreement with the investor, pursuant to which we agreed to file a registration statement with the Securities Exchange Commission to register for resale the shares issued in the private placement and the shares issuable upon exercise of the warrants issued in the private placement. We filed such registration statement, the PIPE Registration Statement, on February 11, 2013, which became effective on February 14, 2013.

December 2012 PIPES Offering	Name of Purchaser	Dollars Invested	Post-Split Shares	Post-Split Warrant Shares
5% shareholder and Affiliate	Investocor Trust Dr. Michael Bristow, M.D., Ph.D., CEO and Director	\$ 250,000.00	86,186	64,639

The January, 2013 Private Placement

On January 22, 2013, we sold approximately \$1 million of our common stock and warrants for common stock in a private placement transaction with accredited investors including our Chief Executive Officer. We issued 356,430 shares of common stock together with warrants to purchase 249,501 shares of common stock. The net proceeds, after deducting placement agent fees and other offering expenses, were approximately \$805,000. Each unit, consisting of a share of common stock and a warrant to purchase 0.70 shares of common stock, was sold at a purchase price of \$2.81 per unit. The warrants were exercisable upon issuance, expire seven years from the date of issuance, and have an exercise price of \$2.28 per share. Pursuant to the terms of the Registration Rights Agreements (the Rights Agreements) entered into as part of this and prior Private Placement transactions, we filed a registration statement for the resale of the shares underlying the units sold in these private placements. That registration statement was declared effective by the Securities and Exchange Commission on February 14, 2013.

January 2013 Private Placement	Name of Purchaser	Dollars Invested	Post-Split Shares	Post-Split Warrant Shares
5% Shareholder and Affiliate	NFS custodian for Michael R. Bristow	\$ 500,000	178,215	124,751
5% Shareholder	Sabby Healthcare Volatility Master Fund, Ltd.	\$ 249,999.94	89,107	62,375

The February, 2013 Registered Direct Offering

On January 31, 2013, we sold approximately \$730,000 of our common stock and warrants for common stock in a Registered Direct Offering in which we issued 164,636 shares of common stock and warrants to purchase 65,855 shares of common stock. The net proceeds, after deducting placement agent fees and other offering expenses payable by us, was approximately \$616,000. Each unit, consisting of a share of common stock and a warrant to purchase 0.40 shares of common stock, was sold at a purchase price of \$4.43 per unit. The warrants were exercisable upon issuance, expire five years from the date of issuance, and have an exercise price of \$4.13 per share. The Registered Direct Offering was effected pursuant to a prospectus supplement filed with the Securities and Exchange Commission on February 1, 2013. The warrant agreements provide for settlement of the warrants in unregistered shares should an effective registration statement or current prospectus not be in place at the time a warrant is exercised.

February 2013 Registered Direct Offering	Name of Purchaser	Dollars Invested	Post-Split Shares	Post-Split Warrant Shares
5% Shareholder	Sabby Healthcare Volatility Master Fund, Ltd.	\$ 364,999.49	82,318	32,927

The June 2013 Public Offering

On June 4, 2013, we sold shares of our Series A Convertible Preferred Stock (Preferred Stock) and warrants to purchase common stock in a public offering for aggregate gross proceeds of \$20 million. We issued 125,000 shares of Preferred Stock and warrants to purchase up to 6,250,000 shares of common stock at a purchase price of \$160 per share of Preferred Stock. The net proceeds, after deducting placement agent fees and other offering expenses payable by us, were approximately \$17.9 million. Each share of Preferred Stock was convertible into 100 shares of our common stock at any time at the option of the holder. The warrants have an exercise price of \$1.60 per share, will expire on the five year anniversary of the date of issuance, and were exercisable immediately upon issuance. Our Chief Executive Officer participated in the offering, purchasing 781 shares of Preferred Stock and warrants to purchase 39,050 shares of common stock. As of December 31, 2013, no shares of Preferred Stock remained outstanding as 125,000 shares of the Preferred Stock had been converted into 12,500,000 shares of common stock since June 4, 2013.

The securities were sold pursuant to a placement agreement and have been registered under the Securities Act of 1933 pursuant to the Company's Registration Statement on Form S-1, as amended (No.333-187508), which was declared effective by the Securities and Exchange Commission on May 29, 2013, and the Preferred Stock and warrants were offered and sold pursuant to a prospectus dated May 30, 2013.

June 2013 Public Offering	Name of Purchaser	Dollars Invested	Series A Preferred Shares	Common Warrant Shares
5% Shareholder	Sabby Management LLC	10,000,000	62,500	3,125,000
5% Shareholder and Affiliate	Michael R. Bristow, M.D., Ph.D., President and CEO	124,960	781	39,050

Policies and Procedures for Related Party Transactions

In January 2009, in conjunction with our merger with Nuvelo, Inc., our board of directors adopted an audit committee charter that provides that the audit committee will review and approve all related party transactions. Accordingly, all related party transactions are reviewed and approved by our audit committee, including the private placements described above. This review covers any material transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which we were or are to be a participant, and a related party had or will have a direct or indirect material interest, including, purchases of goods or services by or from the related party or entities in which the related party has a material interest, indebtedness, guarantees of indebtedness and employment by us of a related party.

HOUSEHOLDING OF PROXY MATERIALS

The SEC has adopted rules that permit companies and intermediaries (e.g., brokers) to satisfy the delivery requirements for Notices of Internet Availability of Proxy Materials or other Annual Meeting materials with respect to two or more stockholders sharing the same address by delivering a single Notice of Internet Availability of Proxy Materials or other Annual Meeting materials addressed to those stockholders. This process, which is commonly referred to as "householding," potentially means extra convenience for stockholders and cost savings for companies.

This year, a number of brokers with account holders who are ARCA biopharma, Inc. stockholders will be "householding" the Company's proxy materials. A single Notice of Internet Availability of Proxy Materials will be

delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker that they will be householding communications to your address, householding will continue until you are notified otherwise or until you revoke your consent. If, at any time, you no longer wish to participate in householding and would prefer to receive a separate Notice of Internet Availability of Proxy Materials, please notify your broker or ARCA biopharma, Inc. Direct your written request to Secretary, ARCA biopharma, Inc., 11080 CirclePoint Road, Suite 140, Westminster, Colorado, 80020 or contact Investor Relations at 720-940-2100. The Company undertakes to promptly deliver a separate copy of the Notice of Internet Availability of Proxy Materials promptly upon receiving your written request. Stockholders who currently receive multiple copies of the Notices of Internet Availability of Proxy Materials at their addresses and would like to request householding of their communications should contact their brokers.

OTHER MATTERS

The Board of Directors knows of no other matters that will be presented for consideration at the Annual Meeting. If any other matters are properly brought before the meeting, it is the intention of the persons named in the accompanying proxy to vote on such matters in accordance with their best judgment.

By Order of the Board of Directors

/s/ Christopher Ozeroff
Christopher Ozeroff
Secretary, Senior Vice President and General
Counsel

April 15, 2014

A copy of the Company's Annual Report to the Securities and Exchange Commission on Form 10-K for the fiscal year ended December 31, 2013, is available without charge upon written request to: Corporate Secretary, ARCA biopharma, Inc., 11080 CirclePoint Road, Suite 140, Westminster, Colorado 80020.

Electronic Voting Instructions

Available 24 hours a day, 7 days a week!

Instead of mailing your proxy, you may choose one of the voting methods outlined below to vote your proxy.

VALIDATION DETAILS ARE LOCATED BELOW IN THE TITLE BAR.

Proxies submitted by the Internet or telephone must be received by 1:00 a.m., Mountain Time, on June 5, 2014.

Vote by Internet

Go to www.investorvote.com/ABIO
Or scan the QR code with your smartphone
Follow the steps outlined on the secure website

Vote by telephone

Call toll free 1-800-652-VOTE (8683) within the USA, US territories & Canada on a touch tone telephone

Follow the instructions provided by the recorded message

Using a **black ink** pen, mark your votes with an **X** as shown in this example. Please do not write outside the designated areas. **X**

q IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. q

Proposals The Board of Directors recommends a vote FOR all the nominees listed and FOR Proposal 2.

1. Election of Two Directors for a three-year term ending at the Annual Meeting of Stockholders in 2017 or until the election and qualification of their respective

successors.
NOMINEES:

	For	Withhold		For	Withhold
01 - Michael R. Bristow, M.D., Ph.D.	••		02 - Robert E. Conway	••	••

+

	For	Against	Abstain
2. Ratification of the selection of KPMG LLP as the Company's independent registered public accounting firm for the fiscal year ending December 31, 2014.

In their discretion, the proxies are also authorized to vote upon such other matters as may properly come before the Annual Meeting.

B Non-Voting Items

Change of Address Please print your new address below. **Comments** Please print your comments below.

Meeting Attendance
Mark the box to the right ..
if you plan to attend the
Annual Meeting.

C Authorized Signatures This section must be completed for your vote to be counted. Date and Sign Below

Please date and sign exactly as the name appears on this card. Joint owners should each sign. Please give full title when signing as executor, administrator, trustee, attorney, guardian for a minor, etc. Signatures for corporations and partnerships should be in the corporate or firm name by a duly authorized person.

Date (mm/dd/yyyy) Please print date below. Signature 1 Please keep signature within the box. Signature 2 Please keep signature within the box.

/ /

**Important notice regarding the Internet availability of
proxy materials for the Annual Meeting of stockholders.**

**The ARCA biopharma, Inc. Annual Report
and ARCA biopharma, Inc. Notice of Annual Meeting are available at:**

www.edocumentview.com/ABIO

q IF YOU HAVE NOT VOTED VIA THE INTERNET OR TELEPHONE, FOLD ALONG THE PERFORATION, DETACH AND RETURN THE
BOTTOM PORTION IN THE ENCLOSED ENVELOPE. q

Proxy ARCA BIOPHARMA, INC.

PROXY SOLICITED BY THE BOARD OF DIRECTORS OF ARCA BIOPHARMA, INC.

FOR THE ANNUAL MEETING OF STOCKHOLDERS TO BE HELD ON JUNE 5, 2014

The undersigned hereby acknowledges receipt of the Notice of Annual Meeting of Stockholders and Proxy Statement of ARCA biopharma, Inc. (the Company), dated April 15, 2014, in connection with the Company's Annual Meeting of Stockholders to be held at the Denver Marriott Westminster Hotel, 7000 Church Ranch Blvd., Westminster, CO 80021, at 9:00 a.m., Mountain Time, on Thursday, June 5, 2014, and does hereby appoint Michael R. Bristow, M.D., Ph.D., Patrick M. Wheeler and Christopher D. Ozeroff, and each of them (with full power to act alone), proxies of the undersigned with all the powers the undersigned would possess if personally present and with full power of substitution in each of them, to appear and vote all shares of Common Stock of the Company which the undersigned would be entitled to vote if personally present at the 2014 Annual Meeting of Stockholders, and at any adjournment or adjournments thereof.

The shares represented hereby will be voted as directed herein. **IN EACH CASE, IF NO DIRECTION IS INDICATED, SUCH SHARES WILL BE VOTED FOR ALL NOMINEES LISTED AND FOR PROPOSAL 2. AS TO ANY OTHER MATTER THAT MAY PROPERLY COME BEFORE THE MEETING OR ANY ADJOURNMENTS THEREOF, SAID PROXY HOLDERS WILL VOTE IN ACCORDANCE WITH THEIR BEST JUDGMENT. THIS PROXY MAY BE REVOKED IN WRITING AT ANY TIME PRIOR TO THE VOTING THEREOF.**

PLEASE VOTE, DATE AND SIGN ON THE REVERSE SIDE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE.

Please be sure to sign and date this Proxy.