

ARCA biopharma, Inc.
Form 10-K/A
April 18, 2013
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, DC 20549

Form 10-K/A

(Amendment No. 1)

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2012

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____

Commission File Number: 000-22873

ARCA biopharma, Inc.

(Exact name of Registrant as specified in its charter)

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Delaware
(State or Other
Jurisdiction of
Incorporation or Organization)

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

8001 Arista Place, Suite 430

Broomfield, Colorado 80021

(Address of Principal Executive Offices including Zip Code)

Registrant's telephone number, including area code:

(720) 940-2200

Securities registered pursuant to Section 12(b) of the Exchange Act:

| Title of Each Class | Name of Each Exchange on Which Registered |
|--|--|
| Common Stock, par value \$0.001 per share | Nasdaq Capital Market |

Securities registered pursuant to Section 12(g) of the Exchange Act:

None

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of Form 10-K or any amendments to this Form 10-K.

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

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

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The aggregate market value of the voting and non-voting common stock held by non-affiliates of the Registrant was \$5,229,571 based on the closing sale price of the Registrant's common stock on the NASDAQ Capital Market on April 15, 2013. Shares of the Registrant's common stock beneficially owned by each executive officer and director of the Registrant and by each person known by the Registrant to beneficially own 10% or more of its outstanding common stock have been excluded, in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes. The number of outstanding shares of the Registrant's common stock as of April 15, 2013 was 3,185,562.

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EXPLANATORY NOTE

ARCA biopharma, Inc. (the Registrant, the Company, ARCA, we or us) is filing this Amendment No. 1 on Form 10-K/A (this Amendment amends its Annual Report on Form 10-K for the fiscal year ended December 31, 2012, filed with the Securities and Exchange Commission (the SEC) on March 21, 2013 (the Original Filing). This Amendment is being filed solely to include all of the Part III information required by applicable SEC rules and regulations. Accordingly, the Registrant hereby amends and replaces in their entirety Items 10, 11, 12, 13 and 14 in the Original Filing.

As required by Rule 12b-15 of the Securities Exchange Act of 1934, as amended, the Registrant's principal executive officer and principal financial officers are providing Rule 13a-14(a) and (b) certifications. Accordingly, the Registrant hereby amends Item 15 in the Original Filing to add such certifications as Exhibits.

On March 4, 2013, the Registrant executed a reverse split of its common stock, in which every six shares of issued and outstanding common stock were combined into one share of issued and outstanding common stock. Accordingly, except as otherwise indicated, all information in this Amendment reflects such reverse split.

Except as described above, this Amendment does not amend, update or change any other items or disclosures in the Original Filing, including any of the financial information disclosed in Parts II and IV of the Original Filing. This Amendment does not reflect events occurring after the filing of the Original Filing or modify or update those disclosures, including any exhibits to the Original Filing affected by subsequent events. Information not affected by the changes described above is unchanged and reflects the disclosures made at the time of the Original Filing. Accordingly, the Amendment should be read in conjunction with our filings made with the SEC subsequent to the filing of the Original Filing, including any amendments to those filings.

ANNUAL REPORT ON FORM 10-K/A

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2012

Amendment No. 1

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Our directors, executive officers and key employees as of April 1, 2013 are as follows:

| Name | Age | Position |
|-------------------------------|------------|--|
| Dr. Michael R. Bristow | 68 | President, Chief Executive Officer and Director |
| Patrick M. Wheeler | 43 | Chief Financial Officer |
| Christopher D. Ozeroff | 54 | Secretary, Senior Vice President and General Counsel |
| Dr. Jean-François Formela (1) | 56 | Director |
| Dr. Burton E. Sobel (2)(3) | 75 | Director |
| Dr. Linda Grais (1)(2)(3) | 56 | Director, Lead Independent |
| Dr. John L. Zabriskie (1)(2) | 73 | Director |

(1) Member of the compensation committee

(2) Member of the audit committee

(3) Member of the nominating and corporate governance committee

Dr. Michael R. Bristow. Dr. Bristow 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 the Company, and as a Board member of ARCA Colorado since 2005, and of the Company since January 2009.

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 the merger with Nuvelo. 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. 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 and General Counsel since December 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 one of the founders of ARCA Colorado in September 2004, and had served as its Executive Vice President of Business Development, General Counsel and Secretary since that date. From August 1999,

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Mr. Ozeroff was previously 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.

Dr. Jean-François Formela. Dr. Formela has served as a member of Company's Board of Directors since the merger with Nuvelo in January 2009. Dr. Formela had also served as a director of ARCA Colorado from February 2006 until the merger. Dr. Formela is a Partner of and joined Atlas Venture in 1993 to help build the U.S. Life Sciences franchise. Previously, he was Senior Director, Medical Marketing and Scientific Affairs at Schering-Plough Corporation, a worldwide pharmaceutical company, in the U.S. During his tenure there, he was responsible for the marketing of Intron A, Schering-Plough's alpha-interferon. In his last position at Schering-Plough, Dr. Formela directed the U.S. Phase IV studies in all therapeutic areas, as well as the health economics and biotechnology pre-marketing groups. As a medical doctor, Dr. Formela practiced emergency medicine at Necker University Hospital in Paris. Since joining Atlas Venture, Dr. Formela has been involved in the formation of companies such as Adnexus, Archemix, ArQule, Aureon Laboratories, Cellzome, deCODE, Exelixis, MorphoSys, NxStage, Resolvix Pharmaceuticals, and SGX Pharmaceuticals. He was also an investor in Achillion and Nuvelo and director of biochem pharma and Novoxel. Dr. Formela serves as a member of the Board of Directors of Horizon Pharma, Inc. In the past five years, Dr. Formela has also served on the Boards of Directors of Achillion Pharmaceuticals, Inc., SGX Pharmaceuticals, Inc., NxStage Medical, Inc. and deCODE genetics, Inc. Dr. Formela received his M.D. from Paris University School of Medicine, and his M.B.A. from Columbia University. Dr. Formela is an appropriate member of the Company's Board of Directors, given his medical background, his extensive experience in the pharmaceutical industry, and his extensive experience as an investor in and board member of new biotechnology and pharmaceutical companies. Dr. Formela also has extensive experience with, and knowledge of, the Company's business, having been on the Board of ARCA Colorado since 2006, and on the Board and a Committee member of the Company since January 2009.

Dr. Burton E. Sobel. Dr. Sobel has served as a member of the Company's Board of Directors since the merger with Nuvelo in January 2009 and as a member of Nuvelo's Board of Directors since September 2004. Since June 2005, Dr. Sobel has served as Professor of Medicine and Biochemistry at the University of Vermont and Fletcher Allen Health Care, where he formerly served as Chair of the Department of Medicine from 1994 to June 2005. Dr. Sobel served as Senior Counsel to the Executive Dean of the University of Vermont College of Medicine and to the Executive Vice President of Fletcher Allen Health Care from 1996 to 1998. From 1994 to 1996, Dr. Sobel served as Professor of Medicine at Washington University in St. Louis, Missouri. In the last five years, Dr. Sobel has served on the Boards of Directors of Ariad Pharmaceuticals, Inc., New River Pharmaceuticals, Inc., Intrexon, Inc. and Clinical Data, Inc. Dr. Sobel received his M.D. from the Harvard Medical School, magna cum laude, and his A.B. from Cornell University. Dr. Sobel is an appropriate member of the Company's Board of Directors, given his medical training, his background in cardiovascular research, and his experience in cardiovascular drug development. Dr. Sobel also has extensive experience with, and knowledge of ARCA's business, having been on the Board and Committees of Nuvelo, Inc. prior to the merger, and on the Board and Committees of the Company since January 2009.

Dr. Linda Grais. Dr. Grais 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. In June 2012, Dr. Grais joined Ocera Therapeutics, Inc. as Chief Executive Officer. 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 focusing on new treatments for cancer. 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

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of a pharmaceutical company, and her experience as an investor in new life sciences companies. She has 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.

Dr. John L. Zabriskie. Dr. Zabriskie has served as a member of the Company's Board of Directors since the merger with Nuvelo in January 2009. Before the merger, Dr. Zabriskie had served as a director of ARCA Colorado since March 2005. Dr. Zabriskie is Co-Founder and Director of Puretech Ventures, LLC, a firm that co-founds life science companies, and the past Chairman of the Board, Chief Executive Officer, and President of NEN Life Science Products, Inc., a supplier of kits for labeling and detection of DNA. Prior to joining NEN Life Science Products in July 1997, Dr. Zabriskie was President and Chief Executive Officer of Pharmacia and Upjohn Inc. Prior to joining Upjohn in 1994, Dr. Zabriskie was Executive Vice President for Merck & Co., Inc. He currently serves on the Board of Directors of Array BioPharma Inc., Kellogg Co. and Puretech Ventures. As part of a member of the Board of Directors for Kellogg Co., Dr. Zabriskie has served on the audit committee for the past ten years. Within the past five years, Dr. Zabriskie has also served on the Board of Directors of Momenta Pharmaceuticals, Inc. and MacroChem Corporation. Dr. Zabriskie received his undergraduate degree in chemistry from Dartmouth College and his Ph.D. in organic chemistry from the University of Rochester. Dr. Zabriskie is an appropriate member of the Company's Board of Directors due to his extensive experience in the pharmaceutical industry, including senior management experience up to the level of president and chief executive officer of significant public companies, as well as his experience on the boards of directors of public companies, including service on audit committees. Dr. Zabriskie also has extensive experience with and knowledge of the Company's business from his service on the Board of ARCA Colorado since 2005, and his service as a Board member and Chairman of the Audit Committee of the Company since January 2009.

ADDITIONAL INFORMATION REGARDING THE BOARD OF DIRECTORS AND CORPORATE GOVERNANCE

Election of Board of Directors

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 at our annual stockholders' meetings. The Company's Amended and Restated Certificate of Incorporation, as amended, 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 is currently one Class II director (Dr. Bristow), whose term expires at the annual stockholders' meeting in 2014, two Class III directors (Drs. Formela and Sobel), whose terms expire at the annual stockholders' meeting in 2015, and two Class I directors (Drs. Grais and Zabriskie), whose terms expire at the annual stockholders' meeting in 2013.

Our executive officers are appointed by and serve at the discretion of our Board. There are no family relationships between our directors and executive officers.

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.

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 auditors, the Board has affirmatively determined that the following four directors are independent directors within the meaning of the applicable NASDAQ listing standards: Drs. Formela, Grais, Sobel and

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Zabriskie. In making this determination, the Board found that none of these directors had a material or other disqualifying relationship with the Company. Dr. Bristow, the Company's President and Chief Executive Officer is not independent by virtue of his relationship with the Company.

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, 2012, all Section 16(a) filing requirements applicable to its officers, directors and ten percent beneficial owners were complied with.

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.

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 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 auditors; determines and approves the engagement of the independent auditors; determines whether to retain or terminate the existing independent auditors or to appoint and engage new independent auditors; reviews and approves the retention of the independent auditors to perform any proposed permissible non-audit services; monitors the rotation of partners of the independent auditors 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 auditors 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 auditor, 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 composed of three directors: Drs. Zabriskie (chair), Grais, and Sobel. The Audit Committee met five 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 Dr. Zabriskie qualifies as an audit committee financial expert, as defined in applicable SEC rules. The Board made a qualitative assessment of Dr. Zabriskie's level of knowledge and experience based on a number of factors, including his prior experience, business acumen and independence.

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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, 2012 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 accountants' 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, 2012.

Dr. John Zabriskie

Dr. Burton Sobel

Dr. Linda Grais

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.

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Summary Compensation Table For Fiscal 2012 and 2011

The following table shows for the fiscal years ended December 31, 2011 and December 31, 2012, compensation awarded to, paid to, or earned by the Company's principal executive officers and its other named executive officers as of December 31, 2012, collectively, the Named Executive Officers:

| Name and Principal Position | Year | Salary | Option | Bonus | All Other | Total |
|---|------|---------|-------------------|--------|----------------------|---------|
| | | (\$)(2) | Awards (\$)(1) | (\$) | Compensation (\$) | (\$) |
| Michael R. Bristow, President and Chief Executive Officer | 2012 | 246,705 | | 13,304 | 9,868 | 269,877 |
| | 2011 | 272,950 | 54,756 | | 10,912 | 338,618 |
| Patrick M. Wheeler, Chief Financial Officer | 2012 | 200,157 | | | 8,006 | 208,163 |
| | 2011 | 221,450 | 36,504 | | 8,853 | 266,807 |
| Christopher D. Ozeroff, Senior Vice President and General Counsel | 2012 | 241,119 | | | 4,606 | 245,725 |
| | 2011 | 266,770 | 36,504 | | 4,509 | 307,783 |

- (1) The amounts reported under "Option Awards" 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 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, 2012 and filed with the SEC on March 21, 2013.
- (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 occur on the last day 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.

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.

The Company's Board of Directors approved a 2011 base salary for Dr. Bristow of \$272,950 and a 2012 base salary of \$245,655 as a measure to preserve the Company's available capital. 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 March 26, 2012, the Compensation Committee approved a 2011 cash bonus for Dr. Bristow in the amount of \$60,049 for partial achievement of the Company's 2011 performance goals. Specifically, the Board determined that the Company had achieved certain of its 2011 performance goals during the fiscal year 2011 by

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maintaining Nasdaq listing requirements, meeting Company budget goals and by achieving certain product development goals, and had engaged in substantial efforts towards achieving the goal to advance the Company's Gencaro atrial fibrillation regulatory approval process. However, due to the Company's limited financial resources, the Board concluded that the Company would pay cash bonuses for partial achievement of the 2011 performance goals during the 2012 fiscal year upon the Company's completing a transaction providing financing for the Company's planned atrial fibrillation clinical trial (the AF Milestone). Because the AF Milestone was not achieved in 2012, Dr. Bristow's deferred 2011 cash bonus was not paid and will not be rolled over. Dr. Bristow received a bonus of \$13,304 in 2012 to reimburse him for certain health benefit costs. Other than such reimbursement, no bonuses were paid to any Company employees in 2012 as a measure to preserve the Company's available capital.

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) 12 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 12 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 12 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 2011 base salary for Mr. Wheeler of \$221,450 and a 2012 base salary of \$199,305 as a measure to preserve the Company's available capital.

On March 26, 2012, the Compensation Committee approved a 2011 cash bonus for Mr. Wheeler in the amount of \$29,231 for partial achievement of the Company's 2011 performance goals. Specifically, the Board determined that the Company had achieved certain of its 2011 performance goals during the fiscal year 2011 by maintaining Nasdaq listing requirements, meeting Company budget goals and by achieving certain product development goals, and had engaged in substantial efforts towards achieving the goal to advance the Company's Gencaro atrial fibrillation regulatory approval process. However, due to the Company's limited financial resources, the Board concluded that the Company would pay cash bonuses for partial achievement of the 2011 performance goals during the 2012 fiscal year upon the achievement of the AF Milestone. Because the AF

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Milestone was not achieved in 2012, Dr. Wheeler's deferred 2011 cash bonus was not paid and will not be rolled over. No bonuses were paid to Mr. Wheeler in 2012 as a measure to preserve the Company's available capital.

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 severance benefits that include (i) a payment equal to, as applicable, (A) 12 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, or (B) four months of his base salary, if a change of control of the Company has not occurred as of or within thirteen months of such termination, (ii) a payment equal to 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 of out-of-pocket costs to continue group health insurance benefits (and dependent coverage, if applicable) under COBRA for a period equivalent to that set forth in clause (i) above, 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 the Company may elect in its sole discretion to pay additional severance equal to up to 12 months of his base salary, which additional payment would extend certain of the covenants and obligations under Mr. Wheeler's Employee Intellectual Property, Confidentiality and Non-Compete Agreement for such additional period. The severance benefits are 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%, other than any such decrease resulting from a general reduction by the Company in the base salary of all Company executive officers; 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 Board of Directors approved a 2011 base salary for Mr. Ozeroff of \$266,770 and a 2012 base salary of \$240,093 as a measure to preserve the Company's available capital.

On March 26, 2012, the Compensation Committee approved a 2011 cash bonus for Mr. Ozeroff in the amount of \$35,214 for partial achievement of the Company's 2011 performance goals. Specifically, the Board determined that the Company had achieved certain of its 2011 performance goals during the fiscal year 2011 by maintaining Nasdaq listing requirements, meeting Company budget goals and by achieving certain product development goals, and had engaged in substantial efforts towards achieving the goal to advance the Company's Gencaro atrial fibrillation regulatory approval process. However, due to the Company's limited financial resources, the Board concluded that the Company would pay cash bonuses for partial achievement of the 2011 performance goals during the 2012 fiscal year upon the achievement of the AF Milestone. Upon achievement of the AF Milestone, Mr. Ozeroff's deferred 2011 cash bonus will be paid. No bonuses were paid to Mr. Ozeroff in 2012 as a measure to preserve the Company's available capital.

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

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agreed to pay Mr. Ozeroff a severance payment equivalent to (i) 12 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 12 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 12 months of base salary, which additional payment would extend the covenants and obligations under Mr. Ozeroff's 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.

For incentive bonuses tied to 2012 performance, the Compensation Committee and Board of Directors approved a similar bonus structure as they approved for 2011. For 2012 performance, the Compensation Committee of the Board of Directors set a potential bonus target of 50% of base salary for Dr. Bristow and 30% of base salary for Mr. Wheeler and Mr. Ozeroff. For incentive bonuses tied to ARCA's 2012 performance, the Compensation Committee approved a set of weighted goals, which the Board of Directors of ARCA believed were attainable with a very high level of executive performance and would be challenging to achieve. These goals included:

obtaining funding for the atrial fibrillation clinical trial;

completing the planning and regulatory process for the atrial fibrillation clinical trial;

obtaining government or partner support for another clinical study;

complying with securities laws and stock exchange listing requirements applicable to public companies;

developing additional product candidates.

The Compensation Committee and Board of Directors reviewed the 2012 corporate goals described above and determined that they had not sufficiently been achieved and therefore no bonuses were paid.

The Compensation Committee and Board of Directors have not approved a bonus structure or goals for 2013.

Table of Contents*Equity Incentive Compensation*

The option awards reported in the table above were granted to the Executives in 2011. Each of the option awards were priced at \$2.24, the market closing price on the date of grant. These awards vest in monthly installments through May 20, 2014 and have an acceleration provision in the event of a Change of Control of the Company. Upon a Change in Control of the Company, the vesting of these option grants 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.

Outstanding Equity Awards at Fiscal Year-End Table

The following table shows for the fiscal year ended December 31, 2012, certain information regarding outstanding equity awards at fiscal year end for the Named Executive Officers.

Outstanding Equity Awards at December 31, 2012

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, 2012 and filed with the SEC on March 21, 2013.

| | Number of Securities Underlying Unexercised options (#) Exercisable | Number of Securities Underlying Unexercised options (#) Unexercisable | Option Exercise Price (\$) | Option Expiration Date |
|--|---|---|----------------------------|------------------------|
| Michael Bristow, President and Chief Executive Officer | 4,087 | 87(1) | 33.42 | 1/23/2019 |
| | 2,518 | 148(6) | 17.82 | 2/18/2020 |
| | 2,638 | 2,362(7) | 13.44 | 5/20/2021 |
| Patrick Wheeler, Chief Financial Officer | 835 | (5) | 5.40 | 8/3/2016 |
| | 278 | (4) | 10.80 | 5/3/2017 |
| | 4,035 | (3) | 11.16 | 2/12/2018 |
| | 2,916 | 417(2) | 17.40 | 6/25/2019 |
| | 953 | 21(1) | 33.42 | 1/23/2019 |
| | 1,007 | 59(6) | 17.82 | 2/18/2020 |
| | 1,759 | 1,574(7) | 13.44 | 5/20/2021 |
| Christopher Ozeroff, Senior Vice President and General Counsel | 1,007 | 59(6) | 17.82 | 2/18/2020 |
| | 1,759 | 1,574(7) | 13.44 | 5/20/2021 |

- (1) Options vest in monthly installments through January 23, 2013
(2) Options vest in monthly installments through June 25, 2013
(3) Options vest in quarterly installments through February 12, 2012
(4) Options vest in quarterly installments through May 3, 2011

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- (5) Options vest in quarterly installments through July 31, 2010
- (6) Options vest in monthly installments through February 18, 2013
- (7) Options vest in monthly installments through May 20, 2014

Table of Contents**Compensation of Directors**

The following table shows for the fiscal year ended December 31, 2012 certain information with respect to the compensation of all non-employee directors of the Company:

Director Compensation for Fiscal 2012 (1)

| | Fees Earned or Paid in Cash (\$) | Stock Awards (\$) | Non-Equity Incentive Plan Compensation (\$) | Nonqualified Deferred Compensation Earnings (\$) | All Other Compensation (\$) | Option Awards (\$) | Total (\$) |
|---------------------------------|---|----------------------------------|--|---|--|-----------------------------------|-----------------------|
| Jean-Francois Formela, M.D. (2) | 17,500 | | | | | 5,457 | 22,957 |
| Lind Grais, M.D. (3) | 30,000 | | | | | 5,457 | 35,457 |
| Burton E. Sobel, M.D. (4) | 22,500 | | | | | 5,457 | 27,957 |
| John L. Zabriskie, Ph.D (5) | 26,250 | | | | | 5,457 | 31,707 |
| Richard B. Brewer (6) | 22,500 | | | | | 5,457 | 27,957 |

- (1) See Summary Compensation Table for disclosure related to Dr. Bristow
(2) The aggregate number of options awards outstanding at December 31, 2012 for Dr. Formela was 3,027
(3) The aggregate number of options awards outstanding at December 31, 2012 for Dr. Grais was 3,000
(4) The aggregate number of options awards outstanding at December 31, 2012 for Dr. Sobel was 3,479
(5) The aggregate number of options awards outstanding at December 31, 2012 for Dr. Zabriskie was 6,285
(6) On August 15, 2012 Mr. Brewer passed away. The aggregate number of options awards outstanding at December 31, 2012 for Mr. Brewer was 32,767 and his estate has until August 15, 2013 to exercise the options
In 2012, nonemployee directors were compensated for their service on the Company's Board, as follows:

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

As additional compensation for their services, each non-employee director, upon joining the Board, is entitled to an initial grant of options to purchase 1,250 shares of the Company's common stock under the ARCA biopharma, Inc. 2004 Equity Incentive Plan (the Option Plan) and an annual grant of an additional 583 shares of the Company's common stock under the Option Plan;

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

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

Each of the members of the Audit Committee, other than the chair, is 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 is entitled to receive an additional \$5,000; and

The director designated as the Lead Independent Director is 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.

On February 10, 2012, Mr. Brewer and Drs. Formela, Sobel, Zabriskie and Grais each were granted options to purchase 1,166 shares of the Company's common stock under the Option Plan, 583 of which were compensation for service on the Board in 2011 and 583 of which were compensation for service rendered and to be rendered on the Board in 2012. The purchase price for these options was \$6.00, 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).

Table of Contents**Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters
Equity Compensation Plan Information**

The following table sets forth information as of December 31, 2012 for all of our equity compensation plans:

| | No. of Securities to be Issued Upon Exercise of Outstanding Options (a) | Weighted Average Exercise Price of Outstanding Options (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 | 144,019 | \$ 18.28 | 80,255 |
| Total | 144,019 | \$ 18.28 | 80,255 |

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, 2012 and filed with the SEC on March 21, 2013.

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 mix of equity award instruments used under long-term incentive program that includes full value awards also mitigates risk. Finally, the multi-year vesting of equity awards and share ownership guidelines properly account 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.

Security Ownership of Certain Beneficial Owners and of Management*Principal Stockholders*

The following table sets forth certain information regarding the ownership of the Company's Common Stock as of March 31, 2013 by: (i) each 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., 8001 Arista Place, Suite 430, Broomfield, CO 80021.

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 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.

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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, 2013. 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 3,185,562 shares of our common stock outstanding as of March 31, 2013.

| Beneficial Owner | Shares Beneficially Owned | Percentage of Shares Beneficially Owned |
|---|---------------------------------|---|
| Directors and Named Executive Officers | | |
| Michael R. Bristow, M.D., Ph.D. (1) (2) | 603,210 | 17.61% |
| Patrick M. Wheeler (3) | 13,229 | * |
| Christopher D. Ozeroff (4) | 28,759 | * |
| Jean-Francois Formela, M.D. (5) | 318,529 | 9.83% |
| Linda Grais, M.D. (6) | 2,999 | * |
| Burton Sobel, M.D. (7) | 3,477 | * |
| John L. Zabriskie, Ph.D. (8) | 48,171 | 1.50% |
| All current directors and executive officers as a group (7 persons) (10) | 1,018,374 | 28.83% |
| 5% Stockholders | | |
| Michael R. Bristow, M.D., Ph.D. (1) | 603,210 | 17.61% |
| Investocor Trust (2) | 243,393 | 7.40% |
| Atlas Venture Fund VII, L.P. (9) | 315,503 | 9.74% |

* 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 10,173 shares that are exercisable within 60 days of March 31, 2013.
- (2) Includes (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.
- (3) Includes options to purchase 12,673 shares that are exercisable within 60 days of March 31, 2013.
- (4) Includes (a) options to purchase 3,288 shares that are exercisable within 60 days of March 31, 2013, and (b) 7,934 shares issuable upon the exercise of warrants, which warrants are immediately exercisable.
- (5) Includes the following owned directly by Atlas Venture Fund VII, L.P. (AV VII): (a) 263,256 shares and (b) 52,247 shares issuable upon exercise of warrants, which warrants are immediately exercisable. Atlas Venture Associates VII, L.P. (AVA VII LP) is the general partner of AV VII. Atlas Venture Associates VII, Inc (AVA VII Inc.) is the general partner of AVA VII LP. Each AVA VII LP and AVA VII Inc., may also be deemed to beneficially own these shares. Dr. Formela, a director at AV VII Inc., and one of the Company's directors may be deemed to beneficially own these shares. Dr. Formela disclaims beneficial ownership of these shares except to the extent of his pecuniary interest therein. Each of AV VII, AVA VII LP and AVA VII Inc. disclaims beneficial ownership of the shares except to the extent of its pecuniary interest therein. Also includes options to purchase 3,026 shares that are exercisable within 60 days of March 31, 2013. These options were granted to Dr. Formela and the proceeds of any sale of the Company's Common Stock issued to Dr. Formela upon the exercise of this option will be transferred to Atlas Venture Advisors, Inc. (Atlas Advisors) and therefore Dr. Formela disclaims beneficial ownership of such shares which belong to Atlas Advisors. The address for Dr. Formela is 25 First Street, Suite 303, Cambridge, MA 02141.
- (6) Includes options to purchase 2,999 shares that are exercisable within 60 days of March 31, 2013.
- (7) Includes options to purchase 3,477 shares that are exercisable within 60 days of March 31, 2013.

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- (8) Consists of (a) options to purchase 6,282 shares that are exercisable within 60 days of March 31, 2013 granted to Dr. Zabriskie, and (b) 26,021 shares and 15,868 shares issuable upon the exercise of warrants, which warrants are immediately exercisable, owned directly by Lansing Brown Investments, LLC. Dr. Zabriskie, one of the Company's directors, is the President of Lansing Brown Investments, LLC. Dr. Zabriskie has shared voting and dispositive powers over the shares held by Lansing Brown Investments, LLC. He disclaims beneficial ownership of these shares, except to the extent of his pecuniary interest in them.
- (9) Consists of the following owned directly by Atlas Venture Fund VII, L.P., or AV VII, (a) 263,256 shares and (b) 52,247 shares issuable upon exercise of warrants, which warrants are immediately exercisable. AVA VII LP is the general partner of AVA VII. AV VII Inc. is the general partner of AVA VII LP. Each of AV VII, AVA VII LP, and AVA VII Inc. disclaims beneficial ownership of the shares except to the extent of its pecuniary interest therein. The address for Atlas Venture Fund VII, L.P. is 25 First Street, Suite 303, Cambridge, MA 02141.
- (10) See Notes (1) through (8) above.

Table of Contents**Item 13. Certain Relationships and Related Transactions, and Director Independence
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 2011 and 2012, 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 in Item 11. Executive Compensation of this Form 10-K/A.

The Private Placements

The following tables summarize private placement purchases 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.

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

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.

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

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

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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.

Registered Direct Offerings

The following tables summarize registered direct offering purchases 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.

| August 2012 Registered Direct Offering | Name of Purchaser | Dollars Invested | Post-Split Shares | Post-Split Warrant Shares |
|---|---|-------------------------|--------------------------|----------------------------------|
| 5% shareholder | Sabby Healthcare Volatility Master Fund, Ltd. | \$ 333,333.76 | 142,086 | 106,564 |
| 5% shareholder | Sabby Volatility Warrant Master Fund, Ltd. | \$ 166,666.10 | 71,042 | 53,282 |

On August 2, 2012, we sold approximately \$953,000 of ARCA's common stock and warrants for common stock in a Registered Direct Offering under the Company's registration statement on Form S-3 (File No.333-172686) (the Registration Statement) in which we issued 406,099 shares of common stock and warrants to purchase 304,575 shares of common stock. The net proceeds, after deducting placement agent fees and other offering expenses payable by us, was approximately \$741,000, and these proceeds are being used solely for general working capital purposes. Each unit, consisting of a share of common stock and a warrant to purchase 0.75 shares of common stock, was sold at a purchase price of \$2.35 per unit, which was a 15 percent discount to the consolidated price of the stock and warrants, based on the closing bid price of \$2.76 as reported on the NSDAQ Capital Market on August 2, 2012. The warrants become exercisable six months after issuance, expire 6 years thereafter, and have an exercise price of \$2.76 per share, equal to 100% of the closing bid price of ARCA's common stock on the Nasdaq Capital Market on August 2, 2012. The Registered Direct Offering was effected as a takedown off the Registration Statement, which became effective on April 4, 2011, pursuant to a prospectus supplement filed with the SEC on August 3, 2012.

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.

Table of Contents**Item 14. Principal Accounting 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, 2012 and December 31, 2011 by KPMG LLP (KPMG), the Company's independent registered public accounting firm.

| | Fiscal Year Ended 2012 | Fiscal Year Ended 2011 |
|--------------------|-----------------------------------|-----------------------------------|
| Audit Fees (1) | \$ 147,875 | \$ 172,759 |
| Audit-Related Fees | | |
| Tax Fees (2) | | \$ 16,500 |
| All Other Fees | | |
| Total Fees | \$ 147,875 | \$ 189,259 |

(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, 2012 and December 31, 2011, (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.

(2) Tax fees include fees for services rendered for tax compliance, tax advice and tax planning.

All fees described above were approved by the Audit Committee.

Pre-Approval Policies and Procedures

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:

an annual description of all relationships between the auditor and the client that may reasonably be thought to bear on independence;

confirm that, in the auditor's professional judgment, the auditor is independent of the client under SEC requirements;

discuss with the Audit Committee the auditor'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 two members must update the Audit Committee at the next regularly scheduled meeting of any services that were granted specific pre-approval.

The report of independent registered public accountant, KPMG, on the consolidated financial statements of the Company for the year ended December 31, 2012, included in Item 8. Financial Statements and Supplementary Data of this Form 10-K/A 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

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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 by the Company's independent registered public accountant, KPMG, in 2012 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.

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PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) *The following documents are filed as part of this Report:*

1. Consolidated financial statements filed as part of this Report are listed under Part II, Item 8, page 47 of our Form 10-K filed with the SEC on March 21, 2013.
2. No schedules are required because either the required information is not present or is not present in amounts sufficient to require submission of the schedule, or because the information required is included in the consolidated financial statements or the notes thereto.

(b) *Exhibits*

The following documents are filed as part of this annual report on Form 10-K/A. We will furnish a copy of any exhibit listed to requesting stockholders upon payment of our reasonable expenses in furnishing those materials.

| Exhibit Number | Description |
|-----------------------|---|
| 2.1 | Agreement and Plan of Merger and Reorganization, dated September 24, 2008, among Nuvelo, Inc., Dawn Acquisition Sub, Inc. and ARCA biopharma, Inc.(5) |
| 2.2 | Amendment No. 1 to Agreement and Plan of Merger and Reorganization, dated October 28, 2008, by and among Nuvelo, Inc., Dawn Acquisition Sub, Inc. and ARCA biopharma, Inc.(6) |
| 3.1 | Amended and Restated Certificate of Incorporation of the Registrant, as amended.(28) |
| 3.1(a) | Certificate of Amendment to Restated Certificate of Incorporation.(34) |
| 3.2 | Second Amended and Restated Bylaws of the Registrant, as amended.(28) |
| 4.1 | Form of Common Stock Certificate.(7) |
| 4.2 | Certificate of Designations of Series A Junior Participating Preferred Stock. (included as part of Exhibit 3.1) |
| 4.3 | Warrant to Purchase Stock Agreement, dated July 17, 2007, by and between ARCA Discovery, Inc. and Silicon Valley Bank.(8) |
| 4.4 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and SVB Financial Group.(8) |
| 4.5 | Warrant to Purchase Stock Agreement, dated August 19, 2008, by and between ARCA biopharma, Inc. and Silicon Valley Bank.(8) |
| 4.6 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and SVB Financial Group.(8) |
| 4.7 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Boulder Ventures IV, L.P.(8) |
| 4.8 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Boulder Ventures IV, L.P.(8) |
| 4.9 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Boulder Ventures IV (Annex), L.P.(8) |
| 4.10 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Boulder Ventures IV (Annex), L.P.(8) |
| 4.11 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and InterWest Partners IX, LP.(8) |
| 4.12 | |

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- Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and InterWest Partners IX, LP.(8)
- 4.13 Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Atlas Venture Fund VII, L.P.(8)
- 4.14 Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Atlas Venture Fund VII, L.P.(8)

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| Exhibit Number | Description |
|-----------------------|--|
| 4.15 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and The Peierls Foundation, Inc.(8) |
| 4.16 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and The Peierls Foundation, Inc.(8) |
| 4.17 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Skyline Venture Partners Qualified Purchaser Fund IV, L.P.(8) |
| 4.18 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Skyline Venture Partners Qualified Purchaser Fund IV, L.P.(8) |
| 4.19 | Warrant to Purchase Stock Agreement, dated October 18, 2009, by and between ARCA biopharma, Inc. and BioMed Realty, L.P.(16) |
| 4.20 | Form of Common Stock Purchase Warrant.(23) |
| 4.21 | Form of Warrant to Purchase Common Stock.(27) |
| 4.22 | Form of Common Stock Purchase Warrant.(29) |
| 4.23 | Form of Warrants to Purchase Shares of Common Stock, dated October 22, 2012.(30) |
| 4.24 | Form of Warrants to Purchase Shares of Common Stock, dated December 20, 2012.(31) |
| 4.25 | Form of Warrants to Purchase Shares of Common Stock.(32) |
| 4.26 | Form of Common Stock Purchase Warrant.(33) |
| 10.1§ | Amended and Restated Collaboration and License Agreement, dated July 31, 2006, by and between Nuvelo, Inc. and Archemix Corp.(2) |
| 10.2§ | Second Amended and Restated Collaboration and License Agreement, dated April 20, 2010, by and between ARCA biopharma, Inc. and Archemix Corp.(17) |
| 10.3 | Lease, dated February 8, 2008, by and between ARCA Discovery, Inc. and Arista Place, LLC.(8) |
| 10.4 | Loan and Security Agreement, dated July 17, 2007, by and between ARCA Discovery, Inc. and Silicon Valley Bank.(8) |
| 10.5 | First Amendment to Loan and Security Agreement, dated January 21, 2009, by and between ARCA biopharma, Inc. and Silicon Valley Bank.(8) |
| 10.6 | Second Amendment to Loan and Security Agreement, dated March 23, 2009, by and between ARCA biopharma Colorado, Inc. and Silicon Valley Bank.(8) |
| 10.7 | Third Amendment to Loan and Security Agreement, dated April 6, 2009, by and between ARCA biopharma Colorado, Inc. and Silicon Valley Bank(14) |
| 10.8 | Fourth Amendment to Assumption of Loan and Security Agreement, dated April 10, 2009, by and between ARCA biopharma, Inc., ARCA biopharma Colorado, Inc. and Silicon Valley Bank(14) |
| 10.9§ | License and Sublicense Agreement, dated October 28, 2003, by and between ARCA Discovery, Inc. and CPEC, L.L.C.(12) |
| 10.10§ | Amendment to License and Sublicense Agreement, dated February 22, 2006, by and between ARCA Discovery, Inc. and CPEC L.L.C.(13) |
| 10.11§ | Exclusive License Agreement, dated October 14, 2005, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.12§ | First Amendment to Exclusive License Agreement, dated June 23, 2006, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.13§ | Second Amendment to Exclusive License Agreement, dated July 20, 2006, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.14 | Third Amendment to Exclusive License Agreement, dated July 19, 2007, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.15§ | Fourth Amendment to Exclusive License Agreement, dated August 22, 2007, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.16§ | Diagnostic, Collaboration and Option Agreement, dated June 23, 2006, by and between ARCA Discovery, Inc. and CardioDX, Inc.(12) |
| 10.17§ | Amendment to Diagnostic, Collaboration and Option Agreement, dated October 1, 2007, by and between ARCA Discovery, Inc. and CardioDX, Inc.(12) |

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| Exhibit Number | Description |
|-----------------------|--|
| 10.18§ | Manufacturing Agreement, dated September 11, 2006, by and between ARCA Discovery, Inc. and Patheon, Inc.(12) |
| 10.19§ | Development, Commercialization and Licensing Agreement, dated February 1, 2007, by and between ARCA Discovery, Inc. and Laboratory Corporation of America Holdings, Inc.(13) |
| 10.20 | Amendment No. 1 to Development, Commercialization and Licensing Agreement, dated May 14, 2007, by and between ARCA Discovery, Inc. and Laboratory Corporation of America Holdings, Inc.(12) |
| 10.21§ | Amendment No. 2 to Development, Commercialization and Licensing Agreement, dated June 10, 2008, by and between ARCA Discovery, Inc. and Laboratory Corporation of America Holdings, Inc.(12) |
| 10.22 | Materials Transfer Agreement, dated October 14, 2005, by and between ARCA Discovery, Inc. and the University of Colorado.(12) |
| 10.23 | Lease Surrender and Termination Agreement, dated August 5, 2009, by and between ARCA biopharma, Inc. and The Irvine Company LLC.(9) |
| 10.24 | Lease Termination and Warrant Purchase Agreement, dated September 18, 2009, by and between ARCA biopharma, Inc., BMR-201 Industrial Road LLC and BioMed Realty, L.P.(10) |
| 10.25§ | Exclusive Option Agreement, dated December 2, 2009, by and between ARCA biopharma, Inc. and the University of Cincinnati.(16) |
| 10.26 | Agreement Term Extension Letter dated December 8, 2010, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(19) |
| 10.27 | Agreement Term Extension Letter dated December 21, 2010, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(20) |
| 10.28 | Agreement Term Extension Letter dated January 21, 2011, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(21) |
| 10.29 | ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.30 | Amendment No. 1 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.31 | Amendment No. 2 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.32 | Amendment No. 3 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.33 | Amendment No. 4 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.34 | Amendment No. 5 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.35 | Amendment No. 6 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.36 | ARCA biopharma, Inc. 2004 Stock Incentive Plan, Form of Executive Incentive Stock Option Agreement.(7) |
| 10.37 | ARCA biopharma, Inc. 2004 Stock Incentive Plan, Form of Non-Executive Incentive Stock Option Agreement.(7) |
| 10.38 | ARCA biopharma, Inc. 2004 Stock Incentive Plan, Form of Nonqualified Stock Option Agreement.(7) |
| 10.39 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Partial Acceleration Stock Option Agreement.(8) |
| 10.40 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of No Acceleration Stock Option Agreement.(8) |
| 10.41 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Director Stock Option Agreement.(8) |
| 10.42 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Notice of Grant of Stock Option.(8) |
| 10.43 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Notice of Director Grant of Stock Option.(8) |
| 10.44 | Form of Indemnification Agreement between Nuvelo, Inc. and its directors and officers.(1) |
| 10.45 | Nuvelo, Inc. Amended Executive Change in Control and Severance Benefit Plan.(4) |
| 10.46 | Amended and Restated Employment and Retention Agreement, dated June 4, 2008, by and between ARCA biopharma, Inc. and Michael R. Bristow.(8) |

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| Exhibit Number | Description |
|-----------------------|---|
| 10.47 | Assignment and Assumption Agreement, dated January 26, 2009, by and between ARCA biopharma, Inc. and ARCA biopharma Colorado, Inc.(8) |
| 10.48 | Amended and Restated Employment Agreement, dated June 12, 2008, by and between ARCA biopharma, Inc. and Christopher D. Ozeroff.(8) |
| 10.49 | Assignment and Assumption Agreement, dated January 26, 2009, by and between ARCA biopharma, Inc. and ARCA biopharma Colorado, Inc.(8) |
| 10.50 | Amended and Restated ARCA biopharma, Inc. 2004 Equity Incentive Plan(11) |
| 10.51 | ARCA biopharma, Inc. Employee Severance Benefit Plan(18) |
| 10.52 | ARCA biopharma, Inc. 2009 Reduction in Force Severance Benefit Plan(18) |
| 10.53 | Form of Option Amendment pursuant to ARCA biopharma, Inc. 2004 Equity Incentive Plan and ARCA biopharma, Inc. 2004 Stock Option Plan (change of control)(18) |
| 10.54 | Form of Option Agreement and Grant Notice pursuant to ARCA biopharma, Inc. 2004 Equity Incentive Plan (NDA/change of control acceleration)(18) |
| 10.55 | Employment Agreement, dated February 11, 2009, by and between ARCA biopharma, Inc. and Patrick Wheeler. (16) |
| 10.56 | Form of Indemnification Agreement between ARCA biopharma, Inc. and its directors and officers.(8) |
| 10.57 | Agreement Term Extension Letter dated March 31, 2011, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(22) |
| 10.58 | Form of Subscription Agreement.(23) |
| 10.59§ | License Agreement, dated April 15, 2011, by and between ARCA biopharma and the University of Cincinnati.(24) |
| 10.60 | First Amendment to Lease Agreement, dated June 14, 2011, by and between Arista Place, LLC and ARCA biopharma Inc., (f/k/a ARCA Discovery, Inc.).(25) |
| 10.61§ | Amended and Restated Exclusive License Agreement, dated August 12, 2011, by and between the Regents of the University of Colorado and ARCA biopharma, Inc.(26) |
| 10.62 | Form of Subscription Agreement.(27) |
| 10.63 | Form of Registration Rights Agreement.(27) |
| 10.64 | Waiver and Amendment Agreement, dated March 30, 2012, by and between ARCA biopharma, Inc. and Michael Bristow.(28) |
| 10.65 | Waiver and Amendment Agreement, dated March 30, 2012, by and between ARCA biopharma, Inc. and Patrick Wheeler.(28) |
| 10.66 | Waiver and Amendment Agreement, dated March 30, 2012, by and between ARCA biopharma, Inc. and Christopher Ozeroff.(28) |
| 10.67 | Form of Subscription Agreement.(29) |
| 10.68 | Form of Subscription Agreement by and among the Company and the purchasers identified therein, dated October 22, 2012.(30) |
| 10.69 | Form of Registration Rights Agreement.(30) |
| 10.70 | Form of Subscription Agreement by and among the Company and the purchasers identified therein, dated December 18, 2012.(31) |
| 10.71 | Form of Registration Rights Agreement.(31) |
| 10.72 | Form of Amendment to the Registration Rights Agreement, dated December 18, 2012.(31) |
| 10.73 | Form of Subscription Agreement by and among the Company and the purchasers identified therein, dated January 22, 2013.(32) |
| 10.74 | Form of Registration Rights Agreement.(32) |
| 10.75 | Subscription Agreement.(33) |
| 14.1 | Code of Business Conduct and Ethics(9) |
| 16.1 | Letter from Ernst & Young LLP to the Securities and Exchange Commission, dated March 30, 2009.(15) |
| 23.1 | Consent of KPMG LLP, Independent Registered Public Accounting Firm. (35) |

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| Exhibit Number | Description |
|---------------------------|--|
| 24.1 | Power of Attorney (included in the signature page hereto). (35) |
| 31.1 | Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (35) |
| 31.2 | Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (35) |
| 31.3* | Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 31.4* | Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 32.1 | Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. sec. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (35) |
| 32.2* | Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. sec. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 101.INS | XBRL Instance Document (35) |
| 101.SCH | XBRL Taxonomy Extension Schema Document (35) |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document (35) |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document (35) |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document (35) |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document (35) |

* Filed herewith.

Compensatory plan or agreement.

§ Confidential treatment has been requested for portions of this document, which are omitted and filed separately with the SEC.

XBRL (Extensible Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, as amended, is deemed not filed for purposes of section 18 of the Securities Exchange Act of 1934, as amended, and otherwise is not subject to liability under these sections.

- (1) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Hyseq, Inc. s Form S-1, filed on June 12, 1997, as amended, File No. 333-29091.
- (2) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 10-Q, filed on November 8, 2006, File No. 000-22873.
- (3) Previously filed with the SEC as an Appendix to and incorporated herein by reference from Nuvelo, Inc. s Proxy Statement on Schedule 14A, filed on April 18, 2007, File No. 000-22873.
- (4) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 10-Q, filed on November 7, 2007, File No. 000-22873.
- (5) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 8-K, filed on September 25, 2008, File No. 000-22873.
- (6) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 8-K, filed on October 29, 2008, File No. 000-22873.
- (7) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on January 28, 2009, File No. 000-22873.
- (8) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-K, filed on March 27, 2009, File No. 000-22873.
- (9) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on November 16, 2009, File No. 000-22873.
- (10) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on September 24, 2009, File No. 000-22873.
- (11) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q/A, filed on August 21, 2009, File No. 000-22873.

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- (12) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on May 15, 2009, File No. 000-22873.
- (13) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q/A, filed on November 6, 2009, File No. 000-22873.
- (14) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on April 10, 2009, File No. 000-22873.
- (15) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on March 30, 2009, File No. 000-22873.
- (16) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-K, filed on March 4, 2010, File No. 000-22873.
- (17) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on August 10, 2010, File No. 000-22873.
- (18) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on August 10, 2009, File No. 000-22873.
- (19) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on December 14, 2010, File No. 000-22873.
- (20) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on December 22, 2010, File No. 000-22873.
- (21) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on January 26, 2011, File No. 000-22873.
- (22) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on April 5, 2011, File No. 000-22873.
- (23) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K filed on April 18, 2011, File No. 000-22873.
- (24) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on May 16, 2011, File No. 000-22873.
- (25) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K filed on June 20, 2011, File No. 000-22873.
- (26) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on August 15, 2011, File No. 000-22873.
- (27) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K filed on December 22, 2011, File No. 000-22873.
- (28) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on May 14, 2012, File No. 000-22873.
- (29) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on August 3, 2012, File No. 000-22873.
- (30) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on October 23, 2012, File No. 000-22873.
- (31) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on December 19, 2012, File No. 000-22873.
- (32) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on January 23, 2013, File No. 000-22873.
- (33) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on February 1, 2013, File No. 000-22873.
- (34) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on March 5, 2013, File No. 000-22873.
- (35) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-K, filed on March 21, 2013, File No. 000-22873.

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ARCA biopharma, INC.

By:

/s/ MICHAEL R. BRISTOW
Michael R. Bristow

President and Chief Executive Officer

Dated: April 18, 2013

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons on behalf of ARCA biopharma, Inc., in the capacities and on the dates indicated.

| Signature | Title | Date |
|---|---|----------------|
| /s/ MICHAEL R. BRISTOW Michael R. Bristow | President and Chief Executive Officer and Director (Principal Executive Officer) | April 18, 2013 |
| /s/ PATRICK M. WHEELER Patrick M. Wheeler | Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer) | April 18, 2013 |
| * Jean-Francois Formela | Director | April 18, 2013 |
| * Linda Grais | Director | April 18, 2013 |
| * Burton E. Sobel | Director | April 18, 2013 |
| * John L. Zabriskie | Director | April 18, 2013 |

*By: /s/ MICHAEL R. BRISTOW

Michael R. Bristow, Attorney-in-Fact

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| Exhibit Number | Description |
|-----------------------|--|
| 2.1 | Agreement and Plan of Merger and Reorganization, dated September 24, 2008, among Nuvelo, Inc., Dawn Acquisition Sub, Inc. and ARCA biopharma, Inc.(5) |
| 2.2 | Amendment No. 1 to Agreement and Plan of Merger and Reorganization, dated October 28, 2008, by and among Nuvelo, Inc., Dawn Acquisition Sub, Inc. and ARCA biopharma, Inc.(6) |
| 3.1 | Amended and Restated Certificate of Incorporation of the Registrant, as amended.(28) |
| 3.1(a) | Certificate of Amendment to Restated Certificate of Incorporation.(34) |
| 3.2 | Second Amended and Restated Bylaws of the Registrant, as amended.(28) |
| 4.1 | Form of Common Stock Certificate.(7) |
| 4.2 | Certificate of Designations of Series A Junior Participating Preferred Stock. (included as part of Exhibit 3.1) |
| 4.3 | Warrant to Purchase Stock Agreement, dated July 17, 2007, by and between ARCA Discovery, Inc. and Silicon Valley Bank.(8) |
| 4.4 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and SVB Financial Group.(8) |
| 4.5 | Warrant to Purchase Stock Agreement, dated August 19, 2008, by and between ARCA biopharma, Inc. and Silicon Valley Bank.(8) |
| 4.6 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and SVB Financial Group.(8) |
| 4.7 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Boulder Ventures IV, L.P.(8) |
| 4.8 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Boulder Ventures IV, L.P.(8) |
| 4.9 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Boulder Ventures IV (Annex), L.P.(8) |
| 4.10 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Boulder Ventures IV (Annex), L.P.(8) |
| 4.11 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and InterWest Partners IX, LP.(8) |
| 4.12 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and InterWest Partners IX, LP.(8) |
| 4.13 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Atlas Venture Fund VII, L.P.(8) |
| 4.14 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Atlas Venture Fund VII, L.P.(8) |
| 4.15 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and The Peierls Foundation, Inc.(8) |
| 4.16 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and The Peierls Foundation, Inc.(8) |
| 4.17 | Warrant to Purchase Stock Agreement, dated October 10, 2008, by and between ARCA biopharma, Inc. and Skyline Venture Partners Qualified Purchaser Fund IV, L.P.(8) |
| 4.18 | Amendment No. 1 to Warrant to Purchase Stock Agreement, dated February 19, 2009, by and between ARCA biopharma, Inc. and Skyline Venture Partners Qualified Purchaser Fund IV, L.P.(8) |
| 4.19 | Warrant to Purchase Stock Agreement, dated October 18, 2009, by and between ARCA biopharma, Inc. and BioMed Realty, L.P.(16) |
| 4.20 | Form of Common Stock Purchase Warrant.(23) |
| 4.21 | Form of Warrant to Purchase Common Stock.(27) |
| 4.22 | Form of Common Stock Purchase Warrant.(29) |
| 4.23 | Form of Warrants to Purchase Shares of Common Stock, dated October 22, 2012.(30) |
| 4.24 | Form of Warrants to Purchase Shares of Common Stock, dated December 20, 2012.(31) |
| 4.25 | Form of Warrants to Purchase Shares of Common Stock.(32) |

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| Exhibit Number | Description |
|---------------------------|--|
| 4.26 | Form of Common Stock Purchase Warrant.(33) |
| 10.1§ | Amended and Restated Collaboration and License Agreement, dated July 31, 2006, by and between Nuvelo, Inc. and Archemix Corp.(2) |
| 10.2§ | Second Amended and Restated Collaboration and License Agreement, dated April 20, 2010, by and between ARCA biopharma, Inc. and Archemix Corp.(17) |
| 10.3 | Lease, dated February 8, 2008, by and between ARCA Discovery, Inc. and Arista Place, LLC.(8) |
| 10.4 | Loan and Security Agreement, dated July 17, 2007, by and between ARCA Discovery, Inc. and Silicon Valley Bank.(8) |
| 10.5 | First Amendment to Loan and Security Agreement, dated January 21, 2009, by and between ARCA biopharma, Inc. and Silicon Valley Bank.(8) |
| 10.6 | Second Amendment to Loan and Security Agreement, dated March 23, 2009, by and between ARCA biopharma Colorado, Inc. and Silicon Valley Bank.(8) |
| 10.7 | Third Amendment to Loan and Security Agreement, dated April 6, 2009, by and between ARCA biopharma Colorado, Inc. and Silicon Valley Bank(14) |
| 10.8 | Fourth Amendment to Assumption of Loan and Security Agreement, dated April 10, 2009, by and between ARCA biopharma, Inc., ARCA biopharma Colorado, Inc. and Silicon Valley Bank(14) |
| 10.9§ | License and Sublicense Agreement, dated October 28, 2003, by and between ARCA Discovery, Inc. and CPEC, L.L.C.(12) |
| 10.10§ | Amendment to License and Sublicense Agreement, dated February 22, 2006, by and between ARCA Discovery, Inc. and CPEC L.L.C.(13) |
| 10.11§ | Exclusive License Agreement, dated October 14, 2005, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.12§ | First Amendment to Exclusive License Agreement, dated June 23, 2006, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.13§ | Second Amendment to Exclusive License Agreement, dated July 20, 2006, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.14 | Third Amendment to Exclusive License Agreement, dated July 19, 2007, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.15§ | Fourth Amendment to Exclusive License Agreement, dated August 22, 2007, by and between ARCA Discovery, Inc. and the University of Colorado s License Equity Holdings, Inc.(12) |
| 10.16§ | Diagnostic, Collaboration and Option Agreement, dated June 23, 2006, by and between ARCA Discovery, Inc. and CardioDX, Inc.(12) |
| 10.17§ | Amendment to Diagnostic, Collaboration and Option Agreement, dated October 1, 2007, by and between ARCA Discovery, Inc. and CardioDX, Inc.(12) |
| 10.18§ | Manufacturing Agreement, dated September 11, 2006, by and between ARCA Discovery, Inc. and Patheon, Inc.(12) |
| 10.19§ | Development, Commercialization and Licensing Agreement, dated February 1, 2007, by and between ARCA Discovery, Inc. and Laboratory Corporation of America Holdings, Inc.(13) |
| 10.20 | Amendment No. 1 to Development, Commercialization and Licensing Agreement, dated May 14, 2007, by and between ARCA Discovery, Inc. and Laboratory Corporation of America Holdings, Inc.(12) |
| 10.21§ | Amendment No. 2 to Development, Commercialization and Licensing Agreement, dated June 10, 2008, by and between ARCA Discovery, Inc. and Laboratory Corporation of America Holdings, Inc.(12) |
| 10.22 | Materials Transfer Agreement, dated October 14, 2005, by and between ARCA Discovery, Inc. and the University of Colorado.(12) |
| 10.23 | Lease Surrender and Termination Agreement, dated August 5, 2009, by and between ARCA biopharma, Inc. and The Irvine Company LLC.(9) |
| 10.24 | Lease Termination and Warrant Purchase Agreement, dated September 18, 2009, by and between ARCA biopharma, Inc., BMR-201 Industrial Road LLC and BioMed Realty, L.P.(10) |
| 10.25§ | Exclusive Option Agreement, dated December 2, 2009, by and between ARCA biopharma, Inc. and the University of Cincinnati.(16) |

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| Exhibit Number | Description |
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| 10.26 | Agreement Term Extension Letter dated December 8, 2010, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(19) |
| 10.27 | Agreement Term Extension Letter dated December 21, 2010, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(20) |
| 10.28 | Agreement Term Extension Letter dated January 21, 2011, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(21) |
| 10.29 | ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.30 | Amendment No. 1 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.31 | Amendment No. 2 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.32 | Amendment No. 3 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.33 | Amendment No. 4 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.34 | Amendment No. 5 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.35 | Amendment No. 6 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7) |
| 10.36 | ARCA biopharma, Inc. 2004 Stock Incentive Plan, Form of Executive Incentive Stock Option Agreement.(7) |
| 10.37 | ARCA biopharma, Inc. 2004 Stock Incentive Plan, Form of Non-Executive Incentive Stock Option Agreement.(7) |
| 10.38 | ARCA biopharma, Inc. 2004 Stock Incentive Plan, Form of Nonqualified Stock Option Agreement.(7) |
| 10.39 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Partial Acceleration Stock Option Agreement.(8) |
| 10.40 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of No Acceleration Stock Option Agreement.(8) |
| 10.41 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Director Stock Option Agreement.(8) |
| 10.42 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Notice of Grant of Stock Option.(8) |
| 10.43 | ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Notice of Director Grant of Stock Option.(8) |
| 10.44 | Form of Indemnification Agreement between Nuvelo, Inc. and its directors and officers.(1) |
| 10.45 | Nuvelo, Inc. Amended Executive Change in Control and Severance Benefit Plan.(4) |
| 10.46 | Amended and Restated Employment and Retention Agreement, dated June 4, 2008, by and between ARCA biopharma, Inc. and Michael R. Bristow.(8) |
| 10.47 | Assignment and Assumption Agreement, dated January 26, 2009, by and between ARCA biopharma, Inc. and ARCA biopharma Colorado, Inc.(8) |
| 10.48 | Amended and Restated Employment Agreement, dated June 12, 2008, by and between ARCA biopharma, Inc. and Christopher D. Ozeroff.(8) |
| 10.49 | Assignment and Assumption Agreement, dated January 26, 2009, by and between ARCA biopharma, Inc. and ARCA biopharma Colorado, Inc.(8) |
| 10.50 | Amended and Restated ARCA biopharma, Inc. 2004 Equity Incentive Plan(11) |
| 10.51 | ARCA biopharma, Inc. Employee Severance Benefit Plan(18) |
| 10.52 | ARCA biopharma, Inc. 2009 Reduction in Force Severance Benefit Plan(18) |
| 10.53 | Form of Option Amendment pursuant to ARCA biopharma, Inc. 2004 Equity Incentive Plan and ARCA biopharma, Inc. 2004 Stock Option Plan (change of control)(18) |
| 10.54 | Form of Option Agreement and Grant Notice pursuant to ARCA biopharma, Inc. 2004 Equity Incentive Plan (NDA/change of control acceleration)(18) |
| 10.55 | Employment Agreement, dated February 11, 2009, by and between ARCA biopharma, Inc. and Patrick Wheeler. (16) |
| 10.56 | Form of Indemnification Agreement between ARCA biopharma, Inc. and its directors and officers.(8) |
| 10.57 | Agreement Term Extension Letter dated March 31, 2011, of the Exclusive Option Agreement by and between ARCA biopharma, Inc. and the University of Cincinnati.(22) |

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| Exhibit Number | Description |
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| 10.58 | Form of Subscription Agreement.(23) |
| 10.59§ | License Agreement, dated April 15, 2011, by and between ARCA biopharma and the University of Cincinnati.(24) |
| 10.60 | First Amendment to Lease Agreement, dated June 14, 2011, by and between Arista Place, LLC and ARCA biopharma Inc., (f/k/a ARCA Discovery, Inc.).(25) |
| 10.61§ | Amended and Restated Exclusive License Agreement, dated August 12, 2011, by and between the Regents of the University of Colorado and ARCA biopharma, Inc.(26) |
| 10.62 | Form of Subscription Agreement.(27) |
| 10.63 | Form of Registration Rights Agreement.(27) |
| 10.64 | Waiver and Amendment Agreement, dated March 30, 2012, by and between ARCA biopharma, Inc. and Michael Bristow.(28) |
| 10.65 | Waiver and Amendment Agreement, dated March 30, 2012, by and between ARCA biopharma, Inc. and Patrick Wheeler.(28) |
| 10.66 | Waiver and Amendment Agreement, dated March 30, 2012, by and between ARCA biopharma, Inc. and Christopher Ozeroff.(28) |
| 10.67 | Form of Subscription Agreement.(29) |
| 10.68 | Form of Subscription Agreement by and among the Company and the purchasers identified therein, dated October 22, 2012.(30) |
| 10.69 | Form of Registration Rights Agreement.(30) |
| 10.70 | Form of Subscription Agreement by and among the Company and the purchasers identified therein, dated December 18, 2012.(31) |
| 10.71 | Form of Registration Rights Agreement.(31) |
| 10.72 | Form of Amendment to the Registration Rights Agreement, dated December 18, 2012.(31) |
| 10.73 | Form of Subscription Agreement by and among the Company and the purchasers identified therein, dated January 22, 2013.(32) |
| 10.74 | Form of Registration Rights Agreement.(32) |
| 10.75 | Subscription Agreement.(33) |
| 14.1 | Code of Business Conduct and Ethics(9) |
| 16.1 | Letter from Ernst & Young LLP to the Securities and Exchange Commission, dated March 30, 2009.(15) |
| 23.1 | Consent of KPMG LLP, Independent Registered Public Accounting Firm. (35) |
| 24.1 | Power of Attorney (included in the signature page hereto). (35) |
| 31.1 | Certification of Chief Executive Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (35) |
| 31.2 | Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (35) |
| 31.3* | Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 31.4* | Certification of Chief Financial Officer pursuant to Rule 13a-14(a) or 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 32.1 | Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. sec. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (35) |
| 32.2* | Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. sec. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 101.INS | XBRL Instance Document (35) |
| 101.SCH | XBRL Taxonomy Extension Schema Document (35) |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document (35) |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document (35) |

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| Number | Description |
|---------------|---|
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document (35) |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document (35) |

* Filed herewith.

Compensatory plan or agreement.

§ Confidential treatment has been requested for portions of this document, which are omitted and filed separately with the SEC.

XBRL (Extensible Business Reporting Language) information is furnished and not filed or a part of a registration statement or prospectus for purposes of sections 11 or 12 of the Securities Act of 1933, as amended, is deemed not filed for purposes of section 18 of the Securities Exchange Act of 1934, as amended, and otherwise is not subject to liability under these sections.

- (1) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Hyseq, Inc. s Form S-1, filed on June 12, 1997, as amended, File No. 333-29091.
- (2) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 10-Q, filed on November 8, 2006, File No. 000-22873.
- (3) Previously filed with the SEC as an Appendix to and incorporated herein by reference from Nuvelo, Inc. s Proxy Statement on Schedule 14A, filed on April 18, 2007, File No. 000-22873.
- (4) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 10-Q, filed on November 7, 2007, File No. 000-22873.
- (5) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 8-K, filed on September 25, 2008, File No. 000-22873.
- (6) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from Nuvelo, Inc. s Form 8-K, filed on October 29, 2008, File No. 000-22873.
- (7) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on January 28, 2009, File No. 000-22873.
- (8) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-K, filed on March 27, 2009, File No. 000-22873.
- (9) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on November 16, 2009, File No. 000-22873.
- (10) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on September 24, 2009, File No. 000-22873.
- (11) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q/A, filed on August 21, 2009, File No. 000-22873.
- (12) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on May 15, 2009, File No. 000-22873.
- (13) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q/A, filed on November 6, 2009, File No. 000-22873.
- (14) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on April 10, 2009, File No. 000-22873.
- (15) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on March 30, 2009, File No. 000-22873.
- (16) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-K, filed on March 4, 2010, File No. 000-22873.
- (17) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on August 10, 2010, File No. 000-22873.
- (18) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on August 10, 2009, File No. 000-22873.
- (19) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on December 14, 2010, File No. 000-22873.
- (20) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on December 22, 2010, File No. 000-22873.

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- (21) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on January 26, 2011, File No. 000-22873.
- (22) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on April 5, 2011, File No. 000-22873.
- (23) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K filed on April 18, 2011, File No. 000-22873.
- (24) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on May 16, 2011, File No. 000-22873.
- (25) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K filed on June 20, 2011, File No. 000-22873.
- (26) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on August 15, 2011, File No. 000-22873.
- (27) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K filed on December 22, 2011, File No. 000-22873.
- (28) Previously filed with the SEC as an Exhibit to and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-Q, filed on May 14, 2012, File No. 000-22873.
- (29) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on August 3, 2012, File No. 000-22873.
- (30) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on October 23, 2012, File No. 000-22873.
- (31) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on December 19, 2012, File No. 000-22873.
- (32) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on January 23, 2013, File No. 000-22873.
- (33) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on February 1, 2013, File No. 000-22873.
- (34) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 8-K, filed on March 5, 2013, File No. 000-22873.
- (35) Previously filed with the SEC as an exhibit and incorporated herein by reference from ARCA biopharma, Inc. s Form 10-K, filed on March 21, 2013, File No. 000-22873.