BLANCK SUSAN RYNEARSON
Form 4
December 23, 2010

FORM 4

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

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

OMB APPROVAL
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Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. *See* Instruction 1(b).

(Print or Type Responses)

1. Name and Address of Reporting Person *
BLANCK SUSAN RYNEARSON

(Last) (First) (Middle)

1932 WYNNTON RD

(Street)

COLUMBUS, GA 31999

(City) (State) (Zip)

2. Issuer Name **and** Ticker or Trading Symbol
AFLAC INC [AFL]

3. Date of Earliest Transaction (Month/Day/Year)
12/21/2010

4. If Amendment, Date Original Filed(Month/Day/Year)

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

_____ Director _____ 10% Owner
__X__ Officer (give title below) _____ Other (specify below)
Sr. Vice President

6. Individual or Joint/Group Filing(Check Applicable Line)
_X_ Form filed by One Reporting Person
___ Form filed by More than One Reporting Person

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1.Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	12/21/2010		M/K		3,406	A	$ 29.3438	3,406	D	
Common Stock	12/21/2010		F/K		1,766	D	$ 56.6	1,640	D	
Common Stock								6,197	I	401(K) Plan
Common Stock								104	I	Custodian/Children
Common Stock								10,737	I	Trust

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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SEC 1474 (9-02)

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned
(*e.g.*, puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Underlying Securities (Instr. 3 and 4)	
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares
Employee Stock Option (right to buy)	$ 29.3438	12/21/2010		M/K			3,406	01/22/2004	01/22/2011	Common Stock	3,406

Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
BLANCK SUSAN RYNEARSON 1932 WYNNTON RD COLUMBUS, GA 31999			Sr. Vice President	

Signatures

Patricia A. Bell as Power of Attorney	12/23/2010
**Signature of Reporting Person	Date

Explanation of Responses:

* If the form is filed by more than one reporting person, *see* Instruction 4(b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure.
Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB number. the date of the financial statements and the reported amounts of expenses during the reporting period. The Company bases estimates on various assumptions that are believed to be reasonable under the circumstances. The Company believes significant judgment was involved in estimating the fair value of assets

acquired and liabilities assumed in the Merger, including in-process research and development, facility exit costs, clinical trial accruals, and in estimating other accrued liabilities, stock-based compensation, and income taxes. Additionally, significant estimates and judgment are required in the evaluation of in-process research and development for impairment. Management is continually evaluating and updating these estimates, and it is possible that these estimates will change in the future or that actual results may differ from these estimates.

Cash Equivalents

Cash equivalents generally consist of money market funds and debt securities with maturities of 90 days or less at the time of purchase. The Company invests its excess cash in securities with strong ratings and has established guidelines relative to diversification and maturity with the objective of maintaining safety of principal and liquidity.

The Company classifies all cash equivalents as available-for-sale securities, and records investments at fair value. Unrealized holding gains and losses on available-for-sale securities, net of any tax effect, are excluded from earnings and are reported in accumulated other comprehensive income (loss), a separate component of stockholders equity, until realized. The specific identification method is utilized to calculate the cost to determine realized gains and losses from the sale of available-for-sale securities. Realized gains and losses are included in interest income in the consolidated statements of operations.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash and cash equivalents and other receivables. The Company has no off-balance-sheet concentrations of credit risk, such as foreign exchange contracts, option contracts, or foreign currency hedging arrangements. The Company maintains cash and cash equivalent balances in the form of bank demand deposits, money market fund accounts and debt securities with financial institutions that management believes are creditworthy. Such balances may at times exceed the insured amount.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation and amortization. Cost includes expenditures for equipment, leasehold improvements, replacements, and renewals. Maintenance and repairs are charged to expense as incurred. When assets are sold, retired, or otherwise disposed of, the cost and accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in operations. The cost of property and equipment is depreciated using the straight-line method over the estimated useful lives of the related assets. Leasehold improvements are amortized over the shorter of the life of the lease or the estimated useful life of the assets. Property and equipment acquired in the Merger were recorded at the estimated fair value as of the date of the Merger, and are subsequently depreciated using the straight-line method over the estimated remaining useful lives of the related assets.

Long-Lived Assets and Impairments

The Company reviews long-lived assets whenever events or changes in circumstances indicate that the carrying value of such assets may not be recoverable. As a development stage company, the Company has not generated positive cash flows from operations, and such cash flows may not materialize for a significant period in the future, if ever. Additionally, the Company may make changes to its business plan that would result in changes to expected cash flows from long-lived assets. It is reasonably possible that future evaluations of long-lived assets, including changes from the Company s current expected use of long-lived assets, may result in material impairments.

Accrued Expenses

As part of the process of preparing its financial statements, the Company is required to estimate accrued expenses. This process involves identifying services that third parties have performed on the Company s behalf and estimating the level of service performed and the associated cost incurred for these services as of the balance sheet date. Examples of estimated accrued expenses include contract service fees, such as fees payable to contract manufacturers in connection with the production of materials related to the Company s drug product, and professional service fees, such as attorneys, consultants, and clinical research organizations. The Company develops estimates of liabilities using its judgment based upon the facts and circumstances known at the time.

Segments

The Company operates in one segment. Management uses one measure of profitability and does not segment its business for internal reporting.

Research and Development

Research and development costs are expensed as incurred. These consist primarily of salaries, contract services, and supplies.

Costs related to clinical trial and drug manufacturing activities are based upon estimates of the services received and related expenses incurred by contract research organizations, or CROs, clinical study sites, drug manufacturers, collaboration partners, laboratories, consultants, or otherwise. Related contracts vary significantly in length, and could be for a fixed amount, a variable amount based on actual costs incurred, capped at a certain limit, or for a combination of these elements. Activity levels are monitored through communications with the vendors, including detailed invoices and task completion review, analysis of expenses against budgeted amounts,

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and pre-approval of any changes in scope of the services to be performed. Certain significant vendors may also provide an estimate of costs incurred but not invoiced on a periodic basis. Expenses related to the CROs and clinical studies are primarily based on progress made against specified milestones or targets in each period.

Stock-Based Compensation

The Company s stock-based compensation cost recognized includes: (a) compensation costs for current period vesting of all share-based awards granted prior to January 1, 2006, based on the intrinsic value method, and (b) compensation cost for current period vesting of all share-based awards granted or modified subsequent to January 1, 2006, based on the estimated grant date fair value. The Company recognizes compensation costs for its share-based awards on a straight-line basis over the requisite service period for the entire award, as adjusted for expected forfeitures.

From Inception through December 31, 2005, the Company accounted for issuances of stock-based compensation under the intrinsic-value-based method of accounting. Under this method, compensation expense is generally recorded on the date of grant only if the estimated fair value of the underlying stock exceeds the exercise price.

Income Taxes

The current provision for income taxes represents actual or estimated amounts payable or refundable on tax returns filed or to be filed each year. Deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the period that includes the enactment date. The overall change in deferred tax assets and liabilities for the period measures the deferred tax expense or benefit for the period. The measurement of deferred tax assets may be reduced by a valuation allowance based on judgmental assessment of available evidence if deemed more likely than not that some or all of the deferred tax assets will not be realized. The Company has recorded a valuation allowance against its deferred tax assets, as management has concluded that it is more likely than not that the net deferred tax asset will not be realized through future taxable income, based primarily on the Company s history of operating losses. As a result of the Merger, a change of ownership of Nuvelo per Internal Revenue Code Section 382 occurred, and accordingly, the Company s ability to utilize Nuvelo s pre-Merger net operating loss carryforwards has been substantially reduced.

Reclassifications

Certain reclassifications have been made in the prior year consolidated financial statements to conform to the 2010 financial statement presentation. These reclassifications have no impact on net income.

Accounting Standards Updates

In January 2010, the Financial Accounting Standards Board, or FASB, issued FASB Accounting Standards Update, or ASU, 2010-06, *Fair Value Measurements and Disclosures: Improving Disclosures about Fair Value Measurements*, or ASU 2010-06, which amends FASB Accounting Standards Codification, or ASC, Topic 820-10, *Fair Value Measurements and Disclosures*. The update provides additional disclosures for transfers in and out of Levels 1 and 2 and for activity in Level 3 and clarifies certain other existing disclosure requirements.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The Company adopted ASU 2010-06 beginning January 1, 2010. This update had no impact on the Company s financial position, results of operations or cash flows.

(2) Earnings (Loss) Per Share

The Company calculates basic earnings per share by dividing (loss) earnings attributable to common stockholders by the weighted average common shares outstanding during the period, excluding common stock subject to vesting provisions. Diluted earnings per share is computed by dividing (loss) earnings attributable to common stockholders by the weighted average number of common shares outstanding during the period increased to include, if dilutive, the number of additional common shares that would have been outstanding if the potential common shares had been issued. The Company s potentially dilutive shares include redeemable convertible preferred stock and convertible notes payable outstanding prior to the Merger and options and warrants.

A reconciliation of the numerator and denominator used in the calculation of basic and diluted loss per share follows:

(In thousands, except shares and per share data)	Years Ended December 31, 2010	2009
Net loss	$ (8,420)	$ (9,138)
Less: Accretion of redeemable convertible preferred stock		(135)
Deemed preferred stock dividend for additional common shares issuable under anti-dilution provision		(781)
Net loss available to common shareholders	$ (8,420)	$ (10,054)
Weighted average shares of common stock outstanding	8,523,018	7,115,192
Less: Weighted average shares of unvested common stock	(16,698)	(22,874)
Total weighted average shares used in computing net loss per share available to common stockholders	8,506,320	7,092,318
Basic and diluted loss per share	$ (0.99)	$ (1.42)

Potentially dilutive securities representing 1.3 million and 1.7 million weighted average shares of common stock were excluded for the years ended December 31, 2010 and 2009, respectively, because including them would have an anti-dilutive effect on net loss attributable to common stockholders per share.

(3) Merger with Nuvelo, Inc. on January 27, 2009

On January 27, 2009, the Company completed the Merger, with ARCA Colorado in accordance with the terms of the Merger Agreement, in which a wholly-owned subsidiary of Nuvelo merged with and into ARCA Colorado, with ARCA Colorado continuing after the Merger as the surviving corporation and a wholly-owned subsidiary of Nuvelo. Immediately following the Merger, the Company changed its name from Nuvelo, Inc. to ARCA biopharma, Inc., and its common stock began trading on the Nasdaq Global Market under the symbol ABIO on January 28, 2009. On March 7, 2011, the listing of the Company s common stock was transferred from the Nasdaq Global Market to the Nasdaq Capital Market.

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The Merger was treated as a reverse merger and accounted for as a business combination using the acquisition method of accounting in accordance with ASC 805. For accounting purposes, ARCA Colorado was considered to have acquired Nuvelo in the Merger, as the stockholders of ARCA Colorado prior to the Merger had a controlling interest in the combined company and the Company s management is the former management of ARCA Colorado. The results of operations and cash flows include the activities of Nuvelo since the date of the Merger. Pursuant to the rules and regulations of the United States Securities and Exchange Commission, or the SEC, the historical financial statements of ARCA Colorado replaced the historical financial statements of Nuvelo, and the disclosures in this report relating to the pre-Merger business of the Company, unless noted as being the business of Nuvelo prior to the Merger, pertain to the business of ARCA Colorado prior to the Merger.

The estimated total acquisition consideration of $11.9 million to acquire Nuvelo was based on the market capitalization of Nuvelo as of January 27, 2009 and the estimated fair values of its vested stock options and warrants outstanding on that date, as this was deemed the most reliable measure of the consideration effectively transferred to acquire Nuvelo on that date. The Company estimated the net assets acquired in the Merger to be $37.2 million, including $45.5 million of cash, cash equivalents and marketable securities. In accordance with ASC 805, any excess of fair value of net assets acquired in a business combination over the acquisition consideration results in a gain on bargain purchase, and as a result, the Company recorded a gain on bargain purchase of $25.3 million.

The following table provides supplemental pro forma financial information for the year ended December 31, 2009 as if the acquisition had occurred as of the beginning of 2009. The unaudited pro forma results exclude the nonrecurring charges for the merger transaction costs and the gain on bargain purchase. The unaudited pro forma results do not reflect any operating efficiencies or potential cost savings that may result from the consolidation of the operations of ARCA Colorado and Nuvelo. Accordingly, these unaudited pro forma results are presented for illustrative purposes and are not intended to represent or be indicative of the actual results of operations of the combined company that would have been achieved had the acquisition occurred at the beginning of 2009, nor are they intended to represent or be indicative of future results of operations.

(in thousands, except per share data)	Year Ended, December 31, 2009
Revenue	$
Net loss	(34,937)
Net loss per share, basic and diluted	$ (4.62)

(4) Financial Instruments

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (exit price). Inputs used to measure fair value are classified into the following hierarchy:

Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities

Level 2 Unadjusted quoted prices in active markets for similar assets or liabilities; unadjusted quoted prices for identical or similar assets or liabilities in markets that are not active; or inputs other than quoted prices that are observable for the asset or liability

Level 3 Unobservable inputs for the asset or liability

The Company s financial assets include $7.0 million at December 31, 2010 and $7.4 million at December 31, 2009, in money market funds, classified as cash equivalents, which are measured at fair value based on Level 1 inputs on a recurring basis.

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Fair Value of Other Financial Instruments

The carrying amount of other financial instruments, including cash and accounts payable, approximated fair value due to their short maturities. As of December 31, 2010 and 2009, the Company did not have any debt outstanding.

(5) Property and Equipment

Property and equipment consist of the following (in thousands):

	Estimated Life	December 31, 2010	December 31, 2009
Computer equipment	3 years	$ 206	$ 200
Lab equipment	5 years	142	142
Furniture and fixtures	5 years	398	398
Computer software	3 years	176	183
Leasehold improvements	Lesser of useful life or life of the lease	744	744
		1,666	1,667
Less accumulated depreciation and amortization		(976)	(641)
		$ 690	$ 1,026

For the years ended December 31, 2010 and 2009, and for the period from Inception through December 31, 2010, depreciation and amortization expense was $338,000, $457,000 and $1.1 million, respectively.

For the year ended December 31, 2009, the Company recorded an impairment charge of $125,000, based upon management s determination of excess carrying value of certain computer and office equipment over the fair value less cost to sell. This impairment charge is the result of the following two activities. In conjunction with the lease termination and exit of the San Carlos facility in the third quarter of 2009, the remaining office equipment was determined to be impaired resulting in a $42,000 charge. In the second quarter of 2009, as a result of the reduction in force, management reviewed excess computer and office equipment for impairment and recognized a charge of $83,000. The impairment charges are classified as restructuring expense in the consolidated statement of operations.

(6) In-Process Research and Development

The Company acquired an IPR&D asset through the Merger related to projects associated with Nuvelo s NU172 program. The Company, with the assistance of a valuation firm, determined the estimated fair value of this asset as of the acquisition date. The estimated fair value as of the acquisition date of $6.0 million was determined using an income approach, as well as discussions with Nuvelo s management and a review of certain program-related documents and forecasts of future cash flows. The initial determination and subsequent evaluation for impairment of the IPR&D asset required management to make significant judgments and estimates.

The IPR&D asset was considered an indefinite-lived intangible asset and was therefore not subject to amortization. However, the Company was required to review the asset for impairment at least annually. ARCA performed its annual test for impairment in 2009 as of November 30, 2009. The impairment test consisted of a comparison of the fair value of the IPR&D with its carrying amount. The income approach, a valuation method

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that establishes the business value based on a stream of future economic benefits, such as net cash flows, discounted to their present value, included probability adjustments to projected expenses and revenue in order to reflect the expected probabilities of incurring development cost prior to commercialization and the probability of achieving commercial revenue due to risks associated with the drug discovery process and regulatory approval. A risk-adjusted discount rate was utilized to discount the probability adjusted net cash flows to their present value, to reflect the time value of money and risks of commercialization, sales, and competition, which are risk elements explicitly not addressed in the probability adjustments.

The evaluation considered multiple factors influencing the value of the asset, including:

- the impact of capital market conditions, particularly increases in the cost of capital for the biopharmaceutical industry;
- the impact of delays in the drug development timeline, including, but not limited to,
  - the impact of the limited development activity subsequent to the Merger,
  - the impact on the drugs projected revenue as a result of a delay in commercialization, considering the fixed patent expiry, and
  - the impact of increased risk of competition; and
- the increasing likelihood of new healthcare legislation that could negatively impact the reimbursement to be received and increase pricing pressure for the drug.

The evaluation of these factors, along with other uncertainties, lead the Company to believe that the in-process research and development asset no longer had value as the fair value indicated by the Company s analysis was zero. As the carrying amount of the IPR&D exceeded its estimated fair value, an impairment loss was recognized in an amount equal to that excess. Accordingly, the Company recorded a loss on impairment for the full balance of the asset totaling $6.0 million in the fourth quarter of 2009. The Company s related deferred tax liability of $2.3 million was also written-off, and was recorded on the consolidated statement of operations as benefit from income taxes.

(7) Restructuring

In the second quarter of 2009, the Company implemented a restructuring plan under which it terminated 44 employees from its research and development and selling, general and administrative functions. The Company implemented the restructuring plan in connection with its strategy to seek alternatives for commercializing Gencaro and to lower operating expenses to preserve the Company s capital resources. As a result of the restructuring plan, the Company recorded a restructuring charge of $1.1 million for personnel-related termination costs, of which $675,000 related to severance amounts to be paid in cash and $387,000 relates to the acceleration of vesting on outstanding stock options. The Company completed all payments associated with this restructuring plan by December 31, 2009.

During the third quarter of 2009, the Company negotiated early terminations of the lease obligations related to the facilities in Sunnyvale, CA and San Carlos, CA, which were assumed in the Merger, resulting in a net charge of approximately $1.2 million.

As part of the restructuring and lease terminations, management reviewed excess computer and office equipment for impairment, and recorded impairment charges of $125,000, based on the excess of the carrying value over the estimated fair value less estimated costs to sell. The impairment charge is classified as restructuring expense in the consolidated statement of operations.

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(8) Related Party Arrangements

Transactions with the Company s President and Chief Executive Officer

Effective July 1, 2010, the Company entered into an unrestricted research grant with its President and Chief Executive Officer s research laboratory, or the Lab, for $269,000 for a one-year term for the advancement of research in chronic heart failure. For the period from July 1, 2009 through June 30, 2010, the Company provided funding to the Lab under another unrestricted research grant for $242,000. In the first half of 2009 the Company provided research funding for the lab of approximately $121,000, in accordance with a similar unrestricted research grant arrangement. Funding of the unrestricted research grants is contingent upon the Company s financial condition, and can be deferred or terminated at the Company s discretion. Total expense under these arrangements for the years ended December 31, 2010 and 2009 was $255,000 and $220,000, respectively, and $1.2 million from Inception through December 31, 2010.

The Company is a party to a materials transfer agreement with the University of Colorado, under which the Company has agreed to pay $35,000 per year to maintain the Heart Tissue Bank associated with the President and Chief Executive Officer s research lab at the University of Colorado. Total expense for the years ended December 31, 2010 and 2009 was $26,000 and $35,000, respectively, and was $201,000 from Inception through December 31, 2010.

(9) Commitments and Contingencies

In addition to the legal matters discussed in Note 12, the Company has or is subject to the following commitments and contingencies:

Employment Agreements

The Company maintains employment agreements with several key executive employees. The agreements may be terminated at any time by the Company with or without cause upon written notice to the employee, and entitle the employee to wages in lieu of notice for periods not exceeding one calendar year from date of termination without cause or by the employee for good reason. Certain of these agreements also provide for payments to be made under certain conditions related to a change in control of the Company.

Operating Leases

The Company is party to a lease agreement, dated February 8, 2008, for approximately 15,000 square feet of an office facility in Broomfield, Colorado, which serves as the Company s primary business offices. The lease has a term of five years with rights to extend the term for two additional three year periods. Per the lease agreement, base rent is subject to annual increases of approximately three percent per year. The rent expense for the lease is being recognized on a straight-line basis over the lease term. Tenant improvement reimbursements from the landlord totaled $593,000 which were recorded as deferred rent and are amortized as reductions to rent expense over the lease term. Rent expense under this lease for the years ended December 31, 2010 and 2009 was $123,000, and was $317,000 from Inception through December 31, 2010.

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Below is a summary of the future minimum lease payments committed under Company s facility in Broomfield, Colorado as of December 31, 2010 (in thousands):

2011	$ 244
2012	251
2013	128
Total future minimum rental payments	$ 623

University of Cincinnati

On December 2, 2009, the Company entered into an agreement with the University of Cincinnati that gives the Company the exclusive option to license exclusive, worldwide rights to a portfolio of certain patent rights relating to genetic polymorphisms of adrenergic cardiac receptors, including, but not limited to, the option to exclusively license all of the rights previously sublicensed nonexclusively under the agreement with CardioDx, Inc, which terminated on April 10, 2010. These rights include those for developing and commercializing diagnostics for the receptor polymorphisms that may indicate which patients will respond most favorably to Gencaro. The agreement has been amended to extend the period of the option from December 2, 2010 through March 31, 2011. As consideration for the option, the Company has assumed the reasonable costs of prosecuting the associated patent rights.

Laboratory Corporation of America

In February 2007, the Company entered into a commercialization and licensing agreement with Laboratory Corporation of America, or LabCorp, to develop, make, market and sell diagnostic tests in connection with the medical prescription of the Company s lead compound, Gencaro. Under the agreement the Company has licensed to LabCorp certain rights to commercialize a diagnostic test. The license agreement has a term of 10 years. LabCorp has the right to cancel the agreement and give the rights to the diagnostic back to the Company. In addition, the Company granted to LabCorp 16,698 shares of common stock. The shares are subject to a restricted stock agreement in which shares vest upon the attainment of certain regulatory approval and drug product sales milestones.

Cardiovascular Pharmacology and Engineering Consultants, LLC, or CPEC

Under the terms of its strategic license agreement with CPEC, a licensing subsidiary of Indevus Pharmaceuticals Inc. (a wholly owned subsidiary of Endo Pharmaceuticals), holding ownership rights to certain clinical trial data of Gencaro, the Company will incur milestone and royalty obligations upon the occurrence of certain events. In August 2008, the Company paid CPEC a milestone payment of $500,000 based on the July 31, 2008 submission of its NDA with the FDA. If the FDA grants marketing approval for Gencaro, the Company will owe CPEC another milestone payment of $8.0 million, which is due within six months after FDA approval. The Company also has the obligation to make milestone payments of up to $5.0 million in the aggregate upon regulatory marketing approval in Europe and Japan. The Company s royalty obligation ranges from 12.5% to 25% of revenue from the related product based on achievement of specified product sales levels, including a 5% royalty that CPEC is obligated to pay under its original license agreement for Gencaro. The Company has the right to buy down the royalties to a range of 12.5% to 17% by making a payment to CPEC within six months of regulatory approval.

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Dendreon

In February 2004, Nuvelo obtained exclusive worldwide rights to all indications of rNAPc2 and all other rNAPc molecules owned by Dendreon Corporation as a result of a licensing agreement entered into with them. Under the terms of the agreement, Nuvelo paid Dendreon an upfront fee of $4.0 million ($0.5 million in cash and $3.5 million in Nuvelo common stock) in 2004. Future milestone payments to Dendreon could reach as much as $2.5 million if rNAPc2 is successfully developed and all commercialization milestones are achieved for the indication of treatment for Ebola virus infection. In addition, such milestones could reach as much as $23.5 million if rNAPc2 is developed and commercialized for indications other than Ebola virus infection. ARCA currently cannot predict if or when any of these milestones will be achieved. If rNAPc2 is commercialized, ARCA will be responsible for paying royalties to Dendreon based on sales of rNAPc2.

(10) Collaborative Agreements

Archemix

In July 2006, Nuvelo entered into a collaboration agreement with Archemix Corporation, or Archemix. Under the agreement, Archemix was responsible for the discovery of short-acting aptamers targeting the coagulation cascade for use in acute cardiovascular procedures, and the Company was responsible for development and worldwide commercialization of these product candidates. In August 2006, Nuvelo made an upfront license fee payment to Archemix of $4.0 million, and pursuant to the terms of the agreement committed to funding at least $5.25 million of Archemix s research over the first three years of the agreement. As of July 2009, this funding commitment had been satisfied. Archemix had the right to receive payments totaling up to $35.0 million per development compound contingent upon the achievement of specified development and regulatory milestones, along with potential royalty payments based on sales of licensed compounds. In February 2008, Nuvelo paid Archemix a $1.0 million milestone fee that was accrued upon dosing of the first patient in the Phase 1 trial for NU172.

On April 20, 2010, the Company amended its collaboration agreement with Archemix for the discovery and development of novel aptamers with anti-coagulation activities, or the Amended Agreement. In the Amended Agreement, the parties modified certain financial provisions and certain other provisions to reflect the termination of the research and collaboration and limitation of the agreement to NU172. In summary, the agreement was amended, as follows:

Pursuant to the previous agreement, ARCA funded a research collaboration under which Archemix generated candidate aptamers for ARCA s selection for further development and commercialization. In the Amended Agreement, ARCA is given sole control over the development, manufacture and commercialization of NU172, and no further research or development collaboration is provided for.

Under the previous agreement, for each product resulting from the collaboration, ARCA had the obligation to fund the development and commercialization of such product and pay milestones and royalties to Archemix on the net sales for such product. However, Archemix had the option to share in 25% of the expenses incurred and profits obtained from the development and commercialization of such product, which election Archemix could make after the inception of the Phase 3 clinical trial for the product. In the Amended Agreement, Archemix no longer has such participation right, but will have the right to receive milestones and royalties on the net sales of NU172, if any, on the same terms and conditions as those under the previous agreement.

The Amended Agreement revises the exclusivity provision to provide that Archemix will not, by itself or in collaboration with a third party, develop, manufacture or commercialize short-acting aptamers

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ARCA BIOPHARMA, INC.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

that directly inhibit thrombin or are used as a treatment for viral or bacterial infections, and in either case cause a therapeutically-useful level of anticoagulation.

Pursuant to the previous agreement, ARCA had the obligation to purchase Archemix common stock in an Archemix initial public offering under certain conditions and subject to certain terms. In the Amended Agreement, this obligation is eliminated.

(11) Equity Distribution Agreement

On December 8, 2009, the Company entered into an equity distribution agreement, or the Agreement, with Wedbush Securities Inc., or the Agent, under which the Company may, from time to time, offer and sell its common stock through the Agent. On April 30, 2010, the Company amended the Agreement to permit it to sell up to an aggregate of $20 million in shares, which have been registered on a registration statement on Form S-3 (File No. 333-148288). Subject to the filing and effectiveness of a Registration Statement on Form S-3, additional sales of the Company s common stock through the Agent, if any, will be made by means of ordinary brokers transactions on the Nasdaq market or otherwise at market prices prevailing at the time of sale, in block transactions, or as otherwise agreed upon by the Company and the Agent. The Agent will use commercially reasonable efforts to sell the Company s common stock from time to time, based upon instructions from the Company, including any price, time or size limits or other customary parameters or conditions the Company may impose. The Company will pay the Agent a commission, or allow a discount, as the case may be, in each case equal to 4.5% of the gross sales proceeds of any common stock sold through the Agent, acting as an agent, under the Agreement. The Company may also sell shares of common stock to the Agent, as principal for its own account, at a price to be agreed upon at the time of sale. In the year ended December 31, 2010, the Company sold 1,164,600 shares of common stock under this Agreement and realized $7.2 million of proceeds, net of $338,000 of offering costs.

(12) Legal Matters

On February 9, 2007, Nuvelo and certain of Nuvelo s former and then current officers and directors were named as defendants in a purported securities class action lawsuit filed in the United States District Court for the Southern District of New York. The suit alleges violations of the Securities Exchange Act of 1934 related to the clinical trial results of alfimeprase, which Nuvelo announced on December 11, 2006, and seeks damages on behalf of purchasers of Nuvelo s common stock during the period between January 5, 2006 and December 8, 2006. Specifically, the suit alleges that Nuvelo misled investors regarding the efficacy of alfimeprase and the drug s likelihood of success. The plaintiff seeks unspecified damages and injunctive relief. Three additional lawsuits were filed in the Southern District of New York on February 16, 2007, March 1, 2007 and March 6, 2007, respectively. In July 2007, the Court granted Nuvelo s motion to transfer the cases to the Northern District of California. The cases were consolidated with the original lawsuit, and plaintiffs filed a consolidated complaint in the Northern District of California on November 9, 2007. Nuvelo filed a motion to dismiss plaintiffs consolidated complaint on December 21, 2007. On June 12, 2008, the Court held a hearing on the motion to dismiss. On December 4, 2008, the Court issued an order dismissing plaintiffs complaint, and granting leave to amend. On January 23, 2009, plaintiffs filed an amended complaint, alleging similar claims. On March 24, 2009, defendants filed a motion to dismiss the amended complaint. On July 15, 2009, the Court held a hearing on the motion to dismiss. On August 17, 2009, the Court granted in part and denied in part defendants motion. ARCA filed its answer to plaintiff s complaint on October 1, 2009.

On December 29, 2010, ARCA and the other defendants reached a settlement of the litigation with the plaintiffs, after participating in mediation before a retired federal judge. On February 25, 2011, the parties

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entered into a settlement agreement, which has been submitted to the Court for approval. ARCA s insurance carriers have agreed to fund the settlement, subject to a reservation of rights by one carrier. If the Court approves the settlement, the litigation will be dismissed against all the defendants. Members of the class who participate in the settlement will provide a release to the defendants, which prevents them from ever asserting any related claims against the defendants. Members of the class, if any, who opt out of the settlement, would not be bound by this release. Although ARCA s insurance carriers have agreed to pay most of the legal fees that have been incurred in defending this litigation, ARCA has separately agreed with its legal counsel to pay $167,000 in legal defense costs incurred on or before December 29, 2010, but only if ARCA obtains additional funding of at least $10 million in 2011. If ARCA does not obtain such additional funding in 2011, ARCA will have no such payment obligation.

In addition, on or about December 6, 2001, Variagenics, Inc. was sued in a complaint filed in the United States District Court for the Southern District of New York naming it and certain of its officers and underwriters as defendants. The complaint purportedly is filed on behalf of persons purchasing Variagenics stock between July 21, 2000 and December 6, 2000, and alleges violations of Sections 11, 12(a)(2) and 15 of the Securities Act of 1933, as amended and Section 10(b) of the Securities Exchange Act of 1934, as amended, and Rule 10b-5 promulgated thereunder. The complaint alleges that, in connection with Variagenics July 21, 2000 initial public offering, or IPO, the defendants failed to disclose additional and excessive commissions purportedly solicited by and paid to the underwriter defendants in exchange for allocating shares of Variagenics stock to preferred customers and alleged agreements among the underwriter defendants and preferred customers tying the allocation of IPO shares to agreements to make additional aftermarket purchases at predetermined prices. Plaintiffs claim that the failure to disclose these alleged arrangements made Variagenics registration statement on Form S-1 filed with the SEC in July 2000 and the prospectus, a part of the registration statement, materially false and misleading. Plaintiffs seek unspecified damages. On or about April 19, 2002, an amended complaint was filed which makes essentially the same allegations. ARCA is involved in this litigation as a result of Nuvelo s merger with Variagenics in January 2003. On April 1, 2009 the parties entered into a settlement agreement. On October 5, 2009, the Court approved the settlement agreement. ARCA s share of the settlement is approximately $385,000. Although the settlement has been approved, it has been appealed by members of the class. ARCA believes that any attorneys fees, loss or settlement payment with respect to this suit will be paid by its insurance provider. However, it is possible that ARCA could be forced to incur material expenses in the litigation if the parties cannot complete a settlement, and, in the event of an adverse outcome, ARCA s business could be harmed.

(13) Stock-based Compensation

Warrants

As of December 31, 2010, warrants to purchase 341,201 shares of common stock were outstanding and exercisable at exercise prices ranging from $3.82 to $241.44, with a weighted average exercise price per share of $19.64. These warrants, which were granted as part of various financing and business agreements, expire at various times between February 2011 and August 2018. Warrants were recorded in additional paid-in capital at their estimated fair market value at the date of grant using the Black-Scholes option-pricing model.

Stock Plans

The Company s equity incentive plan was amended, as approved by shareholders on June 25, 2009, to (i) change the name of the plan from the *Amended and Restated Nuvelo, Inc. 2004 Equity Incentive Plan* to the *Amended and Restated ARCA biopharma, Inc. 2004 Equity Incentive Plan*, or the Equity Plan, (ii) increase the

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maximum number of shares issuable under the plan, revise the formula for determining the maximum number of shares issuable under the plan and implement new share usage rules; and (iii) adjust the award limitations for stock options and stock appreciation rights. As a result of such amendment, the maximum number of shares issuable under the Equity Plan was increased by 326,323 shares.

The Equity Plan provides for the granting of stock options (including indexed options), stock appreciation rights, restricted stock purchase rights, restricted stock bonuses, restricted stock units, performance shares, performance units and deferred stock units. Under the Equity Plan, awards may be granted to employees, directors and consultants of ARCA, except for incentive stock options, which may be granted only to employees. As of December 31, 2010, options to purchase 428,690 shares were outstanding under the Equity Plan, and 458,625 shares were reserved for future awards.

In general, the Equity Plan authorizes the grant of stock options that vest at rates set by the Board of Directors or the Compensation Committee thereof. Generally, stock options granted by ARCA under the equity incentive plans become exercisable ratably for a period of three to four years from the date of grant and have a maximum term of ten years. The exercise prices of stock options under the equity incentive plan generally meet the following criteria: the exercise price of incentive stock options must be at least 100% of the fair market value on the grant date and exercise price of options granted to 10% (or greater) stockholders must be at least 110% of the fair market value on the grant date.

ARCA s other stock plans under which options remained outstanding as of December 31, 2010 are the 1995 Employee Stock Option Plan, the Non-Employee Director Stock Option Plan and the 2002 Equity Incentive Plan. As of December 31, 2010, options to purchase 13,852 shares were outstanding under these stock plans. Additionally, as of December 31, 2010, options to purchase 5,303 shares granted outside of any of Nuvelo s stock plans were outstanding. In conjunction with the Merger, the Company discontinued grants under its 2004 Stock Option Plan effective January 27, 2009. As of December 31, 2010, options to purchase 505,393 shares with a weighted average exercise price of $2.39 per share were outstanding under this plan. Options and awards outstanding under this plan will continue to vest according to the original terms of each grant. No new awards will be granted under this plan. Subsequent to the Merger, the Company has granted stock-based compensation awards under the Equity Plan.

The Company granted options to purchase 128,170 and 491,974 shares of common stock in the years ended December 31, 2010 and 2009, respectively. The fair values of employee stock options granted in the years ended December 31, 2010 and 2009 were estimated at the date of grant using the Black-Scholes model with the following assumptions and had the following estimated weighted average grant date fair value per share:

	Years Ended December 31,	
	2010	**2009**
Expected term	5.7 years	6.4 years
Expected volatility	86%	79%
Risk-free interest rate	2.70%	1.32%
Expected dividend yield	0%	0%
Weighted average grant date fair value per share	$ 2.04	$ 3.21

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

A summary of ARCA s stock option activities for the years ended December 31, 2010 and 2009, and related information as of December 31, 2010, is as follows:

	For the years ended December 31,			
	2010		2009	
	Number of Options	Weighted Average Exercise Price	Number of Options	Weighted Average Exercise Price
Options outstanding, beginning of period	921,104	$ 69.60	584,668	$ 1.74
Assumed in Merger		0.00	278,025	284.59
Fractional option adjustment		0.00	(41)	1.74
Granted	128,170	2.95	491,974	4.56
Exercised	(49,487)	2.80	(63,123)	1.80
Forfeited and cancelled	(46,549)	729.70	(370,399)	49.03
Options outstanding, end of period	953,238	$ 31.87	921,104	$ 69.60
Options exercisable, end of period	676,972	$ 43.49	543,279	$ 115.67
Options vested and expected to vest	938,391	$ 32.33		

The total intrinsic value of options exercised for the years ended December 31, 2010 and 2009 was $208,000 and $105,000, respectively. As of December 31, 2010, the unrecognized compensation expense related to unvested options, excluding estimated forfeitures, was $552,000, which compensation expense is expected to be recognized over a weighted average period of 2.1 years. The Company recognizes compensation costs for its share-based awards on a straight-line basis over the requisite service period for the entire award, as adjusted for expected forfeitures.

The following table summarizes information about stock options outstanding and exercisable as of December 31, 2010:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number Outstanding	Weighted Average Remaining Contractual Term (in years)	Weighted Average Exercise Price	Number Exercisable	Weighted Average Exercise Price
$ 0.06 - $ 0.60	7,488	4.42	$ 0.52	7,488	$ 0.52
0.90 - 0.90	203,691	5.83	0.90	203,691	0.90
1.68 - 2.69	175,644	7.07	2.07	115,545	1.96
2.73 - 2.90	151,905	8.59	2.87	72,733	2.85
2.97 - 5.29	172,998	8.75	3.95	91,956	4.61
5.57 - 73.40	136,210	7.74	15.65	80,257	22.63
81.90 - 753.75	105,302	3.80	252.43	105,302	252.43

953,238	7.06	$ 31.87	676,972	$ 43.49	

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For the years ended December 31, 2010 and 2009 and for the period from Inception through December 31, 2010, the Company recognized the following non-cash, share-based compensation expense (in thousands):

	Years Ended December 31,		Period from December 17, 2001 (date of inception) to December 31, 2010
	2010	2009	
Research and development	$ 128	$ 114	$ 379
Selling, general and administrative	330	344	1,208
Restructuring Expense		387	387
Total	$ 458	$ 845	$ 1,974

Stock-based compensation expense related to non-employees was negligible in 2010 and 2009. ARCA did not recognize any tax benefit related to employee stock-based compensation cost, as a result of the full valuation allowance on its net deferred tax assets.

Stock Option and Restricted Stock Award Modifications

As discussed above in Note 7, the restructuring plan implemented by the Company in the second quarter of 2009 modified certain outstanding unvested stock options held by the affected employees. Outstanding stock options held by affected employees not formerly employed by Nuvelo were modified such that vesting was accelerated on outstanding options representing the number of options that would have vested in one year had such employees continued to provide service to the Company, and the post-termination exercise period of the outstanding stock options was extended to approximately one year. The Company accelerated the vesting on 55,441 stock options.

The Company estimated the fair value of the modified awards using the Black-Scholes model with the following inputs: 1 year expected term; 94% volatility, 0.52% risk-free interest rate, and 0% dividend yield. As a result, the Company recorded a net charge of $381,000 for the option acceleration.

In November 2006, the Company entered into a restricted stock agreement with its President and CEO for 83,490 shares, whereby the President and CEO could purchase the shares at their estimated fair value of $0.90 per share. The Company retained certain repurchase rights (allowing the Company to repurchase the shares at the price paid by this individual) on 41,745 shares that would have lapsed on the date that the trading value of Company s common stock, listed on a national exchange, resulted in market capitalization of the Company, as reported by such exchange over the immediately preceding ten business days, of at least $250.0 million, or a corporate transaction resulted in consideration paid by the acquirer of at least $250.0 million. Repurchase rights on the remaining 41,745 shares would have lapsed on the same terms as the first 41,745 shares if the two conditions above were met with values of at least $500.0 million. In February 2007, the Company amended the purchase terms of the restricted stock agreement to provide that the purchase price for 41,745 shares was deemed to be satisfied in consideration for services rendered to the Company, with an estimated fair value of $37,250. The estimated fair value of the services was expensed, and the total consideration received of $75,000 was reflected as a long-term liability. In October 2008, the restricted stock agreement was amended to provide that the Company s repurchase rights would lapse with respect to all 83,490 shares upon close of the Merger. As a result of such amendment, the Company estimated the fair value of the modification to be $438,000 of which $88,000 was recognized as share-based compensation expense in the first quarter of 2009, and the remainder was recognized in the fourth quarter of 2008.

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(14) Employee Benefit Plans

The Company has a 401(k) plan and makes a matching contribution equal to 100% of the employee s first 3% of the employee s contributions and 50% of the employee s next 2% of contributions. The Company adopted the plan in 2006 and contributed $109,000 and $157,000 for the years ended December 31, 2010 and 2009, respectively, and has contributed $503,000 from Inception through December 31, 2010.

(15) Income Taxes

The Company recorded a $2.3 million benefit from income taxes in 2009 on the consolidated statement of operations due to the write-off of the deferred tax liability related to the IPR&D asset. See Note 5 for discussion of loss on impairment of IPR&D recorded as a result of the annual test for impairment performed in the fourth quarter of 2009.

Effective June 1, 2005, the Company changed from an S-Corporation to a C-Corporation. As an S-Corporation, the net operating loss carryforwards were distributed to the Company s stockholders; such amounts were not significant. Since June 2005 through December 31, 2010, for federal income tax purposes, the Company has net operating loss carryforwards of approximately $88.9 million, and approximately $616,000 of research and development credits that may be used to offset future taxable income. The net operating loss carryforwards will expire beginning 2025 through 2030. Utilization of net operating losses and tax credits, including those acquired as a result of the Merger, will be subject to an annual limitation due to ownership change limitations provided by IRC Section 382. The annual limitation may result in the expiration of the net operating losses and credits before utilization. As such, a portion of the Company s net operating loss carryforwards may be limited.

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the period in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Due primarily to the Company s history of operating losses, management is unable to conclude that it is more likely than not that the Company will realize the benefits of these deductible differences, and accordingly has provided a valuation allowance against the entire net deferred tax asset of approximately $38.9 million at December 31, 2010, reflecting an increase of approximately $10.4 million from December 31, 2009. The deferred tax assets are primarily comprised of net operating loss carryforwards and research and experimentation credit carryforwards. As of December 31, 2010 the Company has not performed a Section 382 limitation study. Depending on the outcome of such a study, the gross amount of net operating losses recognizable in future tax periods could be limited. A limitation in the carryforwards would decrease the carrying amount of the gross amount of the net operating loss carryforwards, with a corresponding decrease in the valuation allowance recorded against these gross deferred tax assets.

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Income tax benefit attributable to our loss from operations before income taxes differs from the amounts computed by applying the U.S. federal statutory income tax rate of 35%, as a result of the following (in thousands):

	Year ended December 31,	
	2010	2009
U.S. federal income tax benefit at statutory rates	$ (2,947)	$ (3,997)
State income tax benefit, net of federal effect	(253)	(630)
Research and experimentation credits	(53)	(136)
Gain on bargain purchase		(10,232)
Settlement of liabilities assumed in the Merger	(5,273)	
Adjustments in tax basis of tangible and intangible assets acquired in the Merger	(1,816)	
Non-deductible merger costs		2,219
Deferred tax liability on impaired IPR&D asset		(2,281)
Other	(54)	(173)
Change in valuation allowance	10,396	12,949
	$	$ (2,281)

Without regard to the deferred tax liability on the impaired IPR&D, the Company has had no provision for income taxes since inception due to its S-corporation status and its subsequent net operating losses.

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Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting and the amounts used for income tax purposes, as well as operating loss and tax credit carryforwards. The income tax effects of temporary differences and carryforwards that give rise to significant portions of the Company s net deferred tax assets are as follows (in thousands):

	December 31,	
	2010	2009
Deferred tax assets:		
Current deferred tax assets:		
Accrued vacation	$ 30	$ 44
Total current deferred tax assets	30	44
Valuation allowance	(30)	(44)
Net current deferred tax assets		
Noncurrent deferred tax assets:		
Net operating loss carryforwards	33,807	26,536
Charitable contribution carryforwards	414	317
Research and experimentation credits	616	563
Capitalized intangibles	3,480	473
Stock based compensation	374	336
Depreciation and amortization		56
Other	199	117
Total noncurrent deferred tax assets	38,890	28,398
Valuation allowance	(38,808)	(28,398)
Net noncurrent deferred tax assets	82	
Deferred tax liabilities:		
Noncurrent deferred tax liabilities:		
Depreciation and amortization	$ (82)	
Total noncurrent deferred tax liabilities	(82)	
Net deferred tax assets	$	$

Since the Company is in a loss carryforward position, the Company is generally subject to U.S. federal and state income tax examinations by tax authorities for all years for which a loss carryforward is available. Thus, the Company s open tax years extend back to 2005. The Company believes that its tax filing positions and deductions related to tax periods subject to examination will be sustained upon audit and does not anticipate any adjustment will result in a material adverse effect on the Company s financial condition, result of operations, or cash flow. For the years ended December 31, 2010 and 2009, the Company has no reserve for uncertain tax positions. The Company does not expect that the total amounts of unrecognized tax benefits will significantly increase or decrease within the subsequent twelve months. In the event the Company concludes it is subject to interest or penalties arising from uncertain tax positions, the Company will record interest and penalties as a component

of other income and expense. No amounts of interest or penalties were recognized in the financial statements for the years ended December 31, 2010 and 2009.

(16) Subsequent Events

To preserve the Company s capital resources, in February 2011, the Company reduced its research and development and general and administrative workforce by 36%. The reduction is expected to reduce the Company s projected cash use by approximately $200,000 per quarter.

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Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure***
Not applicable.

Item 9A. ***Controls and Procedures***
Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of management, including our Chief Executive Officer and our Chief Financial Officer, we have evaluated the effectiveness of the design and operation of our disclosure controls and procedures. Disclosure controls and procedures are controls and procedures that are designed to ensure that information required to be disclosed in our reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC s rules and forms. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective as of the end of the period covered by this annual report.

Management s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15(d)-15(f) under the Exchange Act). Our internal control system was designed to provide reasonable assurance to management and our board of directors regarding the preparation and fair presentation of published financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, we have assessed the effectiveness of our internal control over financial reporting as of December 31, 2010. In making our assessment of internal control over financial reporting, we used the criteria issued in the report Internal Control-Integrated Framework by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). We have concluded that our internal control over financial reporting was effective as of December 31, 2010 based on these criteria.

This annual report does not include an attestation report of our independent registered public accounting firm regarding internal control over financial reporting. Management s report was not subject to attestation by our independent registered public accounting firm pursuant to the exemption from Section 404(b) of the Sarbanes-Oxley Act for non-accelerated filers provided by the Dodd-Frank Wall Street Reform and Consumer Protection Act.

Changes in Internal Control over Financial Reporting

During the fourth quarter of 2010, there were no changes in our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on the Effectiveness of Controls

Our management, including the Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within our company have been detected.

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Item 9B. ***Other Information***

On March 3, 2011, Dr. J. William Freytag tendered his resignation as a member of the Board of Directors of ARCA biopharma, Inc. (ARCA), effective immediately. Dr. Freytag s resignation is not a result of any disagreements with ARCA relating to its operations, policies or practices prior to his resignation. ARCA does not currently have plans to appoint a replacement director to fill the vacancy left by Dr. Freytag s resignation.

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PART III

Item 10. ***Directors, Executive Officers and Corporate Governance***

The information required by this item is incorporated by reference to Election of Board of Directors, Section 16(a) Beneficial Ownership Reporting Compliance and Executive Officers in our Definitive Proxy Statement to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934, relating to our 2011 Annual Meeting of Stockholders.

Item 11. ***Executive Compensation***

The response to this item is incorporated by reference to Executive Compensation in our Definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act, relating to our 2011 Annual Meeting of Stockholders.

Item 12. ***Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters***

The response to this item is incorporated by reference to Security Ownership of Certain Beneficial Owners and Management and Executive Compensation in our Definitive Proxy Statement to be filed pursuant to Regulation 14A under the Exchange Act, relating to our 2011 Annual Meeting of Stockholders.

Item 13. ***Certain Relationships and Related Transactions, and Director Independence***

The response to this item is incorporated by reference to Certain Relationships and Related Transactions in our Definitive Proxy Statement to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934, relating to our 2011 Annual Meeting of Stockholders.

Item 14. ***Principal Accountant Fees and Services***

The response to this item is incorporated by reference to Ratification of Selection of Independent Auditors in our Definitive Proxy Statement to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934, relating to our 2011 Annual Meeting of Stockholders.

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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 55 of this Form 10-K.

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. 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.(8)
3.2	Second Amended and Restated Bylaws of the Registrant, as amended.(10)
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)

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Exhibit Number	Description
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)
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10.7	Third Amendment to Loan and Security Agreement, dated April 6, 2009, by and between ARCA biopharma Colorado, Inc. and Silicon Valley Bank(15)
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10.10§	Amendment to License and Sublicense Agreement, dated February 22, 2006, by and between ARCA Discovery, Inc. and CPEC L.L.C.(14)
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.(13)
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.(13)

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10.34	Amendment No. 3 to the ARCA Discovery, Inc. 2004 Stock Incentive Plan.(7)

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10.42	ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of No Acceleration Stock Option Agreement.(8)
10.43	ARCA biopharma, Inc. 2004 Equity Incentive Plan (f/k/a Nuvelo, Inc. 2004 Equity Incentive Plan), Form of Director Stock Option Agreement.(8)
10.44	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)
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23.1*	Consent of KPMG LLP, Independent Registered Public Accounting Firm.
24.1*	Power of Attorney (included in the signature page hereto).
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.
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.
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.

* 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.
(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 8-K, filed on December 8, 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 10-Q, filed on November 16, 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 8-K, filed on September 24, 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/A, filed on August 21, 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, filed on May 15, 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 10-Q/A, filed on November 6, 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 April 10, 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 8-K, filed on March 30, 2009, File No. 000-22873.

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(17) 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.
(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, 2010, 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 April 30, 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 10-Q, filed on August 10, 2009, 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 December 14, 2010, 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 December 22, 2010, 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 January 26, 2011, File No. 000-22873.

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SIGNATURES

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

ARCA biopharma, Inc.

By: /s/ Patrick M. Wheeler
Patrick M. Wheeler

Principal Accounting Officer

Date: March 8, 2011

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Michael R. Bristow and Patrick M. Wheeler, and each of them, as his true and lawful attorneys-in-fact and agents, with full power of substitution for him, and in his name in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, and any of them or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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)	March 8, 2011
/s/ Patrick M. Wheeler **Patrick M. Wheeler**	Chief Financial Officer (Principal Financial Officer)	March 8, 2011
/s/ Richard B. Brewer **Richard B. Brewer**	Director	March 8, 2011
/s/ Jean-Francois Formela **Jean-Francois Formela**	Director	March 8, 2011
/s/ Linda Grais **Linda Grais**	Director	March 8, 2011
/s/ Ted W. Love **Ted W. Love**	Director	March 8, 2011

/s/ Mary K. Pendergast	Director		March 8, 2011

Mary K. Pendergast

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Signature	Title	Date
/s/ Burton E. Sobel **Burton E. Sobel**	Director	March 8, 2011
/s/ John L. Zabriskie **John L. Zabriskie**	Director	March 8, 2011

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EXHIBIT INDEX

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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.(8)
3.2	Second Amended and Restated Bylaws of the Registrant, as amended.(10)
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)
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* 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.

(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 8-K, filed on December 8, 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 10-Q, filed on November 16, 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 8-K, filed on September 24, 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/A, filed on August 21, 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, filed on May 15, 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 10-Q/A, filed on November 6, 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 April 10, 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 8-K, filed on March 30, 2009, 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-K, filed on March 4, 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, 2010, 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 April 30, 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 10-Q, filed on August 10, 2009, 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 December 14, 2010, 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 December 22, 2010, 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 January 26, 2011, File No. 000-22873.