

ARCA biopharma, Inc.  
Form SC 13G/A  
February 10, 2011

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

**SCHEDULE 13G**

**(Rule 13d-102)**

**Information Statement Pursuant to Rules 13d-1 and 13d-2**

**Under the Securities Exchange Act of 1934  
(Amendment No. 2)\***

**ARCA BIOPHARMA, INC.**

(Name of Issuer)

**Common stock, \$0.001**

(Title of Class of Securities)

**00211Y100**

(CUSIP Number)

**December 31, 2010**

(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)
- Rule 13d-1(d)

\*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).



CUSIP No. 00211Y100

13G

1. Name of Reporting Person  
S.S. or I.R.S. Identification No. of Above Person  
  
Atlas Venture Fund VII, L.P.
2. Check the Appropriate Box if a Member of a Group\*  
(a)   
(b)
3. SEC Use Only
4. Citizenship or Place of Organization  
Delaware
5. Sole Voting Power
6. Shared Voting Power  
1,337,612 shares
7. Sole Dispositive Power
8. Shared Dispositive Power  
1,337,612 shares
9. Aggregate Amount Beneficially Owned by Each Reporting Person  
1,337,612 shares
10. Check Box if the Aggregate Amount in Row (9) Excludes Certain Shares
11. Percent of Class Represented by Amount in Row (9)  
15.01%
12. Type of Reporting Person\*  
PN

Number of  
Shares  
Beneficially  
Owned by  
Each  
Reporting  
Person With

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- Item 1(a).** Name of Issuer  
The name of the issuer to which this filing on Schedule 13G/A relates is ARCA biopharma, Inc. (the Company ).
- Item 1(b).** Address of Issuer s Principal Executive Offices  
The principal executive offices of the Company are located at 8001 Arista Place, Suite 200, Broomfield, CO 80021.
- Item 2(a).** Name of Person Filing  
This Statement is being filed on behalf of Atlas Venture Fund VII, L.P. ("Atlas VII"). Atlas Venture Associates VII, L.P. ("AVA VII LP") is the sole general partner of Atlas VII. Atlas Venture Associates VII, Inc. ("AVA VII Inc.") is the sole general partner of AVA VII LP. Axel Bichara, Christopher Spray, Jean-Francois Formela, Peter Barrett and Jeff Fagnan is each a director of AVA VII Inc. (the "Directors").
- Item 2(b).** Address of Principal Business Office or, if none, Residence  
The principal business address of each of Atlas VII, AVA VII LP, AVA VII Inc. and the Directors is 25 First Street, Suite 303, Cambridge MA 02141.
- Item 2(c).** Citizenship  
Each of Atlas VII, AVA VII LP and AVA VII Inc. is organized under the laws of Delaware. Mr. Bichara is a citizen of Germany. Mr. Formela is a citizen of France. Mr. Spray is a citizen of the United Kingdom. Mr. Barrett is a citizen of the United States. Mr. Fagnan is a citizen of the United States.
- Item 2(d).** Title of Class of Securities  
The class of equity securities of the Company to which this filing on Schedule 13G/A relates is Common Stock, par value \$0.001 ( Common Stock ).
- Item 2(e).** CUSIP Number  
The CUSIP number of the Company s Common Stock is 00211Y100.

**Item 3. If this statement is filed pursuant to §§ 240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:**

Not applicable.

- |     |                       |   |
|-----|-----------------------|---|
| (a) | <input type="radio"/> | Broker or dealer registered under section 15 of the Act (15 U.S.C. 78o).  |
| (b) | <input type="radio"/> | Bank as defined in section 3(a)(6) of the Act (15 U.S.C. 73c).  |
| (c) | <input type="radio"/> | Insurance company as defined in section 3(a)(19) of the Act (15 U.S.C. 78c).  |
| (d) | <input type="radio"/> | Investment company registered under section 8 of the Investment Company Act of 1940 (15 U.S.C. 80a-8).  |
| (e) | <input type="radio"/> | An investment adviser in accordance with §13d-1(b)(1)(ii)(E).   |
| (f) | <input type="radio"/> | An employee benefit plan or endowment fund in accordance with §240.13d-1(b)(1)(ii)(F).  |
| (g) | <input type="radio"/> | A parent holding company or control person in accordance with §240.13d-1(b)(1)(ii)(G).  |
| (h) | <input type="radio"/> | A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C. 1813).   |
| (i) | <input type="radio"/> | A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C. 80a-3). |
| (j) | <input type="radio"/> | Group, in accordance with §240.13d-1(b)(1)(ii)(J).  |
|     | <input type="radio"/> | If this statement is filed pursuant to §240.13d-1(c), check this box.   |

**Item 4. Ownership**

- Item 4(a).** Amount beneficially owned  
 As of the close of business on February 10, 2011, Atlas VII is the record holder of 1,262,163 shares of Common Stock and 75,449 warrants to purchase shares of Common Stock (the "Atlas Shares"). AVA VII LP is the sole general partner of Atlas VII. AVA VII Inc. is the sole general partner of AVA VII LP. Messrs. Bichara, Spray, Formela, Barrett and Fagnan are the directors of AVA VII Inc. No person other than the respective owner referred to herein of the Atlas Shares is known to have the right to receive or the power to direct the receipt of dividends from or the proceeds from the sale of such Atlas Shares. Each of Atlas VII, AVA VII LP, AVA VII Inc. and the Directors disclaim beneficial ownership of the Atlas Shares except for such shares, if any, such person holds of record.
- Item 4(b).** Percent of class  
 As of the close of business on February 10, 2011 Atlas VII was the beneficial owner of 15.01% of the Common Stock.
- Item 4(c).** Number of shares as to which the person has:
- |       |   |
|-------|---|
| (i)   | Sole power to vote or to direct the vote:             |
|       | 0   |
| (ii)  | Shared power to vote or direct the vote:              |
|       | 1,337,612   |
| (iii) | Sole power to dispose or direct the disposition of:   |
|       | 0   |
| (iv)  | Shared power to dispose or direct the disposition of: |
|       | 1,337,612   |

**Item 5. Ownership of Five Percent or Less of a Class**  
 Not Applicable.

**Item 6. Ownership of More than Five Percent on Behalf of Another Person**  
 Not Applicable.

**Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company:**  
 Not Applicable.

**Item 8. Identification and Classification of Members of the Group**  
 Not Applicable. The Filing Persons expressly disclaim membership in a "group" as used in Rule 13d-5(b)(1).

**Item 9. Notice of Dissolution of Group**  
 Not Applicable.

**Item 10.**

**Certification**

Not Applicable. This statement on Schedule 13G is not filed pursuant to Rule 13d-1(b) or 13(d)-1(c).

Dated: February 10, 2011

ATLAS VENTURE FUND VII, L.P.

By: Atlas Venture Associates VII, L.P., its general partner

By: Atlas Venture Associates, Inc., its general partner

By: : /s/ Kristen Laguerre

Name: Kristen Laguerre

Title: Vice President