

ADVENTRX PHARMACEUTICALS, INC.

- 11,283 shares of 4.25660% Series D Convertible Preferred Stock
- Warrants to Purchase up to 19,800,000 shares of Common Stock
- 79,800,000 shares of Common Stock Underlying the Convertible Preferred Stock and the Warrants

This prospectus supplement should be read in conjunction with the prospectus dated October 6, 2009 (the "Prospectus"), which is to be delivered with this prospectus supplement. This prospectus supplement updates the information in the Prospectus. If there is any inconsistency between the information in the Prospectus and this prospectus supplement, you should rely on the information in this prospectus supplement.

Pursuant to the Prospectus, we offered up to \$11,283,000 of our 4.25660% Series D Convertible Preferred Stock, or 11,283 shares based on a stated value of \$1,000 per share, and warrants to purchase up to 19,800,000 shares of our common stock. Delivery of the convertible preferred stock and warrants was made on or about October 9, 2009. In addition, pursuant to the Prospectus, 79,800,000 shares of our common stock issuable upon conversion of the convertible preferred stock and exercise of the warrants were registered to permit their resale to the public by the purchasers of our convertible preferred stock and warrants. We are not selling the shares of common stock issuable upon conversion of the convertible preferred stock or exercise of the warrants, and therefore will not receive any proceeds from such sales, other than the exercise price, if any, to be received upon exercise of the warrants.

This prospectus supplement includes the following documents, as filed by us with the Securities and Exchange Commission:

- Our Current Report on Form 8-K filed on December 24, 2009; and
- Our Current Report on Form 8-K filed on January 4, 2010.

The exhibits to the Current Reports on Form 8-K are not included with this prospectus supplement and are not incorporated herein by reference.

Investing in our securities involves a high degree of risk. Before buying any of our securities, you should read the discussion of material risks of investing in our securities in "Risk Factors" beginning on page 6 of the Prospectus, as updated by this prospectus supplement.

You should rely only on the information contained in the Prospectus, any free writing prospectus prepared by us or on our behalf and this prospectus supplement. We have not authorized anyone to provide you with different or additional information. If anyone provides you with different or additional information, you should not rely on it.

Our common stock is listed on the NYSE Amex under the symbol "ANX." The last reported sale price of our common stock on the NYSE Amex on December 31, 2009 was \$0.3499 per share. We do not intend to list the convertible preferred stock or warrants on any securities exchange.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of the Prospectus or this prospectus supplement. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is January 4, 2010.

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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): December 23, 2009

ADVENTRX Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation)

001-32157
(Commission File Number)

84-1318182
(IRS Employer Identification No.)

6725 Mesa Ridge Road, Suite 100
San Diego, CA 92121
(Address of principal executive offices and zip code)

Not applicable
(Former name or former address if changed since last report)

Registrant's telephone number, including area code: **(858) 552-0866**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
 - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Item 1.01 Entry into a Material Definitive Agreement.

On December 23, 2009, ADVENTRX Pharmaceuticals, Inc. (the "Company") entered into a Third Amendment to Standard Multi-Tenant Office Lease — Gross, dated December 10, 2009, with Westcore Mesa View, LLC and DD Mesa View, LLC (the "Third Amendment"). The Third Amendment further amends that certain Standard Multi-Tenant Office Lease — Gross, dated June 3, 2004, as previously amended (collectively, the "Original Lease") pursuant to which the Company leases offices at 6725 Mesa Ridge Road, San Diego, CA (the "Building"), which offices constitute its corporate headquarters.

Pursuant to the Original Lease, the Company leases approximately 3,173 rentable square feet currently known as Suite 100 of the Building (the "Premises"), which lease was to expire May 31, 2009. Pursuant to the Third Amendment, the Original Lease was amended to, among other things, extend the term of the Original Lease for an additional eight (8) months (i.e., from June 1, 2010 through January 31, 2011) (the "Extension Term"). The monthly base rent for the Premises during the Extension Term is \$4,442.20. In addition, the Company is obligated to pay all other amounts due under the Original Lease.

The foregoing description of the terms of the Third Amendment is subject to, and qualified in its entirety by, the document attached hereto as Exhibit 10.1, which is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

The list of exhibits called for by this Item is incorporated by reference to the Exhibit Index filed with this report.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

ADVENTRX Pharmaceuticals, Inc.

Dated: December 23, 2009

By: /s/ Patrick L. Keran

Name: Patrick L. Keran

Title: Vice President, Legal

Exhibits Index

<u>Exhibit No.</u>	<u>Description</u>
10.1	Third Amendment to Standard Multi-Tenant Office Lease — Gross, dated December 10, 2009, by and among Westcore Mesa View, LLC, DD Mesa View, LLC and ADVENTRX Pharmaceuticals, Inc.

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

FORM 8-K

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

Date of report (Date of earliest event reported): January 4, 2010

ADVENTRX Pharmaceuticals, Inc.

(Exact Name of Registrant as Specified in Charter)

Delaware
(State or Other Jurisdiction of
Incorporation)

001-32157
(Commission File No.)

84-1318182
(IRS Employer Identification No.)

**6725 Mesa Ridge Road, Suite 100
San Diego, CA 92121**
(Address of Principal Executive Offices and Zip Code)

N/A
(Former name or former address if changed since last report)

Registrant's telephone number, including area code: **(858) 552-0866**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
 - Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
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Item 8.01. Other Events.

On January 4, 2010, ADVENTRX Pharmaceuticals, Inc. issued a press release announcing that it has submitted a New Drug Application (NDA) to the U.S. Food and Drug Administration (FDA) for its product candidate ANX-530 (vinorelbine injectable emulsion). The press release is attached hereto as Exhibit 99.1 and is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits.

The list of exhibits called for by this Item is incorporated by reference to the Exhibit Index filed with this report.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, hereunto duly authorized.

ADVENTRX PHARMACEUTICALS, INC.

Dated: January 4, 2010

By: /s/ Patrick L. Keran

Name: Patrick L. Keran

Title: Vice President, Legal

INDEX TO EXHIBITS

99.1 Press release, dated January 4, 2010