

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

Form S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

ADVENTRX Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

Delaware
*(State or other jurisdiction of
incorporation or organization)*

2834
*(Primary Standard Industrial
Classification Code Number)*

84-1318182
*(I.R.S. Employer
Identification Number)*

**6725 Mesa Ridge Road,
Suite 100,
San Diego, CA 92121
(858) 552-0866**

*(Address, including zip code, and telephone number, including
area code, of registrant's principal executive offices)*

**Brian M. Culley
Principal Executive Officer
ADVENTRX Pharmaceuticals, Inc.
6725 Mesa Ridge Road, Suite 100
San Diego, CA 92121
Telephone: (858) 552-0866**

*(Name, address, including zip code, and telephone number,
including area code, of agent for service)*

With a Copy to:

Michael S. Kagnoff, Esq.
DLA Piper LLP (US)
4365 Executive Drive,
Suite 1100
San Diego, CA 92121
Telephone: (858) 677-1400
Facsimile: (858) 677-1401

Patrick L. Keran, Esq.
Principal Financial and Accounting Officer
and General Counsel
ADVENTRX Pharmaceuticals, Inc.
6725 Mesa Ridge Road, Suite 100
San Diego, CA 92121
Telephone: (858) 552-0866

Robert F. Charron,
Esq.
Weinstein Smith LLP
420 Lexington Ave
New York, NY 10170
Telephone: (212) 616-
3007
Facsimile: (212) 869-
2249

Harvey J. Keshner, Esq.
Sichenzia Ross Friedman Ference LLP
61 Broadway, Suite 3200
New York, NY 10006
Telephone: (212) 930-9700
Facsimile: (212) 930-9725

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this Registration Statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective statement for the same offering

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

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered (1)	Proposed Maximum Aggregate Offering Price(2)(3)	Amount of Registration Fee(3)
Convertible Preferred Stock, par value \$0.001 per share(4)		

Shares of Common Stock, par value \$0.001 per share, underlying Convertible Preferred Stock		
Warrants(4)		
Shares of Common Stock, par value \$0.001 per share, underlying Warrants		
Total	\$1,283,000	\$71.59

- (1) Any securities registered hereunder may be sold separately or together with other securities registered hereunder.
- (2) Does not include \$10,000,000 in securities previously registered pursuant to the Registrant's Registration Statement on Form S-1, as amended (File No. 333-160778) declared effective October 6, 2009, for which the registration fee has previously been paid.
- (3) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act. Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), the shares being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares being registered hereunder as a result of stock splits, stock dividends, anti-dilution provisions, or similar transactions. No additional registration fee is being paid for these shares.
- (4) Pursuant to Rule 457(g) under the Securities Act, no separate registration fee is required for the convertible preferred stock or the warrants because the Registrant is registering these securities in the same Registration Statement as the underlying common stock to be offered pursuant thereto.

This Registration Statement shall become effective upon filing with the Commission in accordance with Rule 462(b) under the Securities Act of 1933, as amended.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The Registration Statement is being filed with the Securities and Exchange Commission (the "Commission") pursuant to Rule 462(b) under the Securities Act of 1933, as amended, for the sole purpose of registering additional securities of the same class as were included in our Registration Statement on Form S-1, as amended, File No. 333-160778, declared effective October 6, 2009. The contents of such Registration Statement, including the exhibits thereto, are hereby incorporated by reference.

CERTIFICATION

The Registrant hereby certifies to the Commission that it has instructed its bank to pay the Commission the filing fee of \$71.59 for the additional securities being registered hereby as soon as practicable (but in any event no later than the close of business on October 6, 2009); that it will not revoke such instructions; and that it has sufficient funds in such account to cover the amount of such filing fee.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized in the City of San Diego, State of California, on October 6, 2009.

ADVENTRX PHARMACEUTICALS, INC.

By: /s/ Brian M. Culley
Brian M. Culley
Chief Business Officer and Senior Vice President

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Brian M. Culley</u> Brian M. Culley	Chief Business Officer and Senior Vice President (Principal Executive Officer)	October 6, 2009
<u>/s/ Patrick L. Keran</u> Patrick L. Keran	General Counsel, Secretary and Vice President, Legal (Principal Financial and Accounting Officer)	October 6, 2009
<u>*</u> Jack Lief	Chair of the Board	October 6, 2009
<u>*</u> Alexander J. Denner	Director	October 6, 2009
<u>*</u> Michael M. Goldberg	Director	October 6, 2009
<u>*</u> Mark J. Pykett	Director	October 6, 2009

Signature

Title

Date

*

Eric K. Rowinsky

Director

October 6, 2009

*By: /s/ Brian M. Culley
Brian M. Culley, Attorney-in-Fact

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>
5.1	Opinion of DLA Piper LLP (US)
23.1	Consent of J.H. Cohn LLP, independent registered public accounting firm
23.2	Consent of DLA Piper LLP (US) (included in Exhibit 5.1)
*24.1	Power of Attorney (included on signature page)

* Previously filed with the Registrant's registration statement on Form S-1 (File No. 333-160778).

DLA Piper LLP (US)
4365 Executive Drive, Suite 1100
San Diego, California 92121-2133
www.dlapiper.com

T 858.677.1400
F 858.677.1401

October 6, 2009

ADVENTRX Pharmaceuticals, Inc.
6725 Mesa Ridge Road, Suite 100
San Diego, California 92121

Ladies and Gentlemen:

We have acted as counsel to ADVENTRX Pharmaceuticals, Inc., a Delaware corporation (the "**Company**"), in connection with the filing of a Registration Statement on Form S-1 filed on October 6, 2009 (the "**Registration Statement**"), filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended (the "**Securities Act**"). The Registration Statement is being filed to register additional securities pursuant to Rule 462(b) for the offering related to the Company's Registration Statement on Form S-1 filed on July 24, 2009, as subsequently amended on September 3, 2009, September 25, 2009 and October 5, 2009. The Registration Statement relates to the Company's:

- (i) common stock, \$0.001 par value per share (the "**Common Stock**");
- (ii) convertible preferred stock, \$0.001 par value per share (the "**Preferred Stock**"); and
- (iii) warrants representing rights to purchase Common Stock (the "**Warrants**").

Collectively, the Common Stock, the Preferred Stock and the Warrants are referred to herein as the "**Securities**"; all of which may be issued at an aggregate initial offering price not to exceed \$1,283,000.

We have been advised by the Company that:

1. The rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation privileges of each series of Preferred Stock will be set forth in a certificate of designation to be approved by the Company's Board of Directors, or in an amendment to the Company's Amended and Restated Certificate of Incorporation to be approved by the Company's Board of Directors and stockholders, and that one or both of these documents will be filed as an exhibit to an amendment to the Registration Statement; and
 2. Warrants to purchase Common Stock may be directly issued by the Company to the purchasers of such Warrants, and the particular terms of any Warrants will be set forth in the form of Common Stock Purchase Warrant ("**Common Stock Purchase Warrant**") filed with an amendment to the Registration Statement.
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ADVENTRX Pharmaceuticals, Inc.

October 6, 2009

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In rendering the opinions set forth below, we have assumed that (i) all information contained in all documents reviewed by us is true and correct; (ii) all signatures on all documents examined by us are genuine; (iii) all documents submitted to us as originals are authentic and all documents submitted to us as copies conform to the originals of those documents; (iv) each natural person signing any document reviewed by us had the legal capacity to do so; (v) the Registration Statement, and any further amendments thereto (including post-effective amendments) will have become effective and comply with all applicable laws; (vi) an amendment to the Registration Statement will have been prepared and filed with the Commission describing the Securities offered thereby; (vii) all Securities will be issued and sold in compliance with applicable federal and state securities laws and in the manner stated in the Registration Statement and any amendment thereto; (viii) a definitive purchase or similar agreement with respect to any Securities offered will have been duly authorized and validly executed and delivered by the Company and the other parties thereto; (ix) the Company has reserved from its authorized but unissued and unreserved shares of stock a number sufficient to issue all Securities; and (x) the certificates representing the Securities will be duly executed and delivered.

We have examined the Registration Statement, including the exhibits thereto, and such other documents, corporate records, and instruments and have examined such laws and regulations as we have deemed necessary for purposes of rendering the opinions set forth herein. Based upon such examination and subject to the further provisions hereof, we are of the following opinion:

1. The Common Stock will be validly issued, fully paid and nonassessable, *provided that* (i) the Company's Board of Directors or an authorized committee thereof has specifically authorized the issuance of such Common Stock in exchange for consideration that the Board of Directors or such committee determines as adequate and in excess of the par value of such Common Stock ("**Common Stock Authorizing Resolutions**"), (ii) the terms of the offer, issuance and sale of shares of Common Stock have been duly established in conformity with the Company's Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws and do not violate any applicable law or result in a default under or breach of any agreement or instrument binding on the Company and comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company and (iii) the Company has received the consideration provided for in the applicable Common Stock Authorizing Resolutions.

2. The Preferred Stock will be validly issued, fully paid and nonassessable, *provided that* (i) the Company's Board of Directors or an authorized committee thereof has specifically authorized the issuance of such Preferred Stock in exchange for consideration that the Board of Directors or such committee determines as adequate and in excess of the par value of such Preferred Stock ("**Preferred Stock Authorizing Resolutions**"), (ii) the rights, preferences,

privileges and restrictions of the Preferred Stock have been established in conformity with applicable law, (iii) an appropriate certificate of designation approved by the Company's Board of Directors, or an amendment to the Company's Amended and Restated Certificate of Incorporation approved by the Company's Board of Directors and stockholders, has been duly filed with the State of Delaware, (iv) the terms of the offer, issuance and sale of shares of such class or series of Preferred Stock have been duly established in conformity with the Company's Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws and do not violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company, and (v) the Company has received the consideration provided for in the applicable Preferred Stock Authorizing Resolutions.

3. The Warrants will constitute valid and legally binding obligations of the Company, *provided that* (i) the Company's Board of Directors or an authorized committee thereof has specifically authorized the issuance of such Warrants in exchange for consideration that the Board of Directors or such committee determines as adequate ("**Warrant Authorizing Resolutions**"), which include the terms upon which the Warrants are to be issued, their form and content and the consideration for which shares are to be issued upon exercise of the Warrants, (ii) the Common Stock Purchase Warrant has been duly authorized, executed and delivered and is enforceable in accordance with its terms, (iii) the terms of the offer, issuance and sale of such Warrants have been duly established in conformity with the applicable Warrant Authorizing Resolutions, (iv) the Common Stock Purchase Warrant and the offer, issuance and sale of the Warrants do not violate any applicable law or result in a default under or breach of any agreement or instrument binding upon the Company and comply with any requirement or restriction imposed by any court or governmental body having jurisdiction over the Company, (v) such Warrants have been duly executed and countersigned and offered, issued and sold as contemplated in the Registration Statement, the applicable Warrant Authorizing Resolutions and the Common Stock Purchase Warrant, and (vi) the Company has received the consideration provided for in the applicable Warrant Authorizing Resolutions.

The foregoing opinions are qualified to the extent that the enforceability of any document, instrument or the Securities may be limited by or subject to bankruptcy, insolvency, fraudulent transfer or conveyance, reorganization, moratorium or other similar laws relating to or affecting creditors' rights generally, and general equitable or public policy principles.

We express no opinions concerning (i) the validity or enforceability of any provisions contained in the Common Stock Purchase Warrant that purport to waive or not give effect to rights to notices, defenses, subrogation or other rights or benefits that cannot be effectively waived under applicable law; or (ii) any securities (other than shares of Common Stock) into which the Preferred Stock or the Warrants may be convertible or exercisable.

ADVENTRX Pharmaceuticals, Inc.
October 6, 2009
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In providing this opinion, we have relied as to certain matters on information obtained from public officials and officers of the Company.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and the reference to us under the caption "Legal Matters" in the prospectus included in the Registration Statement. In giving this consent, we do not admit that we are within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Securities and Exchange Commission promulgated thereunder.

This opinion letter is given to you solely for use in connection with the offer and sale of the Securities while the Registration Statement is in effect and is not to be relied upon for any other purpose. Our opinion is expressly limited to the matters set forth above, and we render no opinion, whether by implication or otherwise, as to any other matters relating to the Company, the Securities or the Registration Statement.

Very truly yours,

/s/ DLA Piper LLP (US)

DLA Piper LLP (US)

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-1 (Registration No. 333- _____) of our report dated March 25, 2009 on our audits of the consolidated financial statements of ADVENTRX Pharmaceuticals, Inc. and Subsidiaries (a development stage enterprise) as of December 31, 2008 and 2007 and for the years then ended and for the period from January 1, 2002 through December 31, 2008, which report appears on page F-14 of the Registration Statement on Form S-1 (Registration No. 333-160778). We also consent to the reference to our firm under the caption "Experts" in that Registration Statement.

Our report dated March 25, 2009 contains explanatory paragraphs that state that effective January 1, 2007, ADVENTRX Pharmaceuticals, Inc. and Subsidiaries (a development stage enterprise) adopted Financial Accounting Standards Board Staff Position No. EITF 00-19-2, Accounting for Registration Payment Arrangements, that certain prior year amounts have been restated, and that the Company has suffered recurring losses from operations and negative cash flows from operations that raise substantial doubt about its ability to continue as a going concern. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

/s/ J.H. COHN LLP

San Diego, California
October 2, 2009.