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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):

May 4, 2011

**ADVENTRX Pharmaceuticals, Inc.**

(Exact name of registrant as specified in its charter)

Delaware

001-32157

84-1318182

(State or other jurisdiction  
of incorporation)

(Commission  
File Number)

(I.R.S. Employer  
Identification No.)

12390 El Camino Real, Suite 150, San Diego,  
California

92130

(Address of principal executive offices)

(Zip Code)

Registrant's telephone number, including area code:

858-552-0866

Not Applicable

Former name or former address, if changed since last report

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 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.**

On May 4, 2011, Odysseas D. Kostas delivered notice to ADVENTRX Pharmaceuticals, Inc. (the "Company") of his resignation, effective as of May 5, 2011, as a director of the Company and from all committees of the Company's board of directors. Dr. Kostas resigned due to other work commitments, and not due to any disagreement with the Company known to any of its executive officers on any matter relating to the Company's operations, policies or practices.

The nominating and governance committee of the Company's board of directors is conducting a search to identify a candidate as soon as possible to fill the vacancy created by Dr. Kostas' departure. In the event a candidate is identified prior to the Company's annual meeting of stockholders to be held on June 15, 2011, the effective date of such candidate's appointment to the board of directors is likely to be delayed until after the annual meeting.

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**SIGNATURES**

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.

*May 9, 2011*

ADVENTRX Pharmaceuticals, Inc.

By: */s/ Patrick L. Keran*

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*Name: Patrick L. Keran*

*Title: President and Chief Operating Officer*