

INFINITY PHARMACEUTICALS, INC.
Form SC 13G/A
February 16, 2010

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

SCHEDULE 13G

**Under the Securities Exchange Act of 1934
(Amendment No. 1)***

INFINITY PHARMACEUTICALS, INC.
(Name of Issuer)
COMMON STOCK
(Title of Class of Securities)
45665G303
(CUSIP Number)
DECEMBER 31, 2009
(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 the disclosures provided in a prior cover page.

The information required in 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. 45665G303

NAME OF REPORTING PERSONS

1. Venrock Associates

CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS)

2. (a) ¹
(b) _o

SEC USE ONLY

3.

CITIZENSHIP OR PLACE OF ORGANIZATION

4. New York, United States

SOLE VOTING POWER

5. NUMBER OF 0

SHARED VOTING POWER

6. SHARES BENEFICIALLY OWNED BY 1,176,284²

SOLE DISPOSITIVE POWER

7. EACH REPORTING PERSON 0

SHARED DISPOSITIVE POWER

8. WITH: 1,176,284²

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

9. 1,176,284²

CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS)

10.

o

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

11.

4.5%³

TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)

12.

PN

¹ Venrock Associates, Venrock Associates III, L.P. and Venrock Entrepreneurs Fund III, L.P. are members of a group for purposes of this Schedule 13G.

² Consists of 211,504 shares of common stock owned by Venrock Associates, 941,249 shares of common stock owned by Venrock Associates III, L.P. and 23,531 shares of common stock owned by Venrock Entrepreneurs Fund III, L.P.

³ This percentage is calculated based upon 26,198,513 shares of the Issuer's common stock outstanding as of September 30, 2009, as set forth in the Issuer's most recent Form 10-Q for the quarter ended September 30, 2009, filed with the Securities and Exchange Commission on November 9, 2009.

CUSIP No. 45665G303

NAME OF REPORTING PERSONS

1. Venrock Associates III, L.P.

CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS)

2. (a) ¹
(b) ^o

SEC USE ONLY

3.

CITIZENSHIP OR PLACE OF ORGANIZATION

4. New York, United States

SOLE VOTING POWER

5. NUMBER OF 0

SHARED VOTING POWER

6. SHARES BENEFICIALLY OWNED BY 1,176,284²

SOLE DISPOSITIVE POWER

7. EACH REPORTING PERSON 0

SHARED DISPOSITIVE POWER

8. WITH: 1,176,284²

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

9. 1,176,284²

CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS)

10.

o

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

11.

4.5%³

TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)

12.

PN

¹ Venrock Associates, Venrock Associates III, L.P. and Venrock Entrepreneurs Fund III, L.P. are members of a group for purposes of this Schedule 13G.

² Consists of 211,504 shares of common stock owned by Venrock Associates, 941,249 shares of common stock owned by Venrock Associates III, L.P. and 23,531 shares of common stock owned by Venrock Entrepreneurs Fund III, L.P.

³ This percentage is calculated based upon 26,198,513 shares of the Issuer's common stock outstanding as of September 30, 2009, as set forth in the Issuer's most recent Form 10-Q for the quarter ended September 30, 2009, filed with the Securities and Exchange Commission on November 9, 2009.

CUSIP No. 45665G303

NAME OF REPORTING PERSONS

1. Venrock Entrepreneurs Fund III, L.P.

CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (SEE INSTRUCTIONS)

2. (a) p¹
(b) o

SEC USE ONLY

3.

CITIZENSHIP OR PLACE OF ORGANIZATION

4. New York, United States

SOLE VOTING POWER

5.

NUMBER OF 0

SHARED VOTING POWER

6.

SHARES BENEFICIALLY OWNED BY 1,176,284²

SOLE DISPOSITIVE POWER

7.

EACH REPORTING PERSON 0

SHARED DISPOSITIVE POWER

8.

WITH: 1,176,284²

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

9. 1,176,284

CHECK IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (SEE INSTRUCTIONS)

10.

o

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

11.

4.5%³

TYPE OF REPORTING PERSON (SEE INSTRUCTIONS)

12.

PN

¹ Venrock Associates, Venrock Associates III, L.P. and Venrock Entrepreneurs Fund III, L.P. are members of a group for purposes of this Schedule 13G.

² Consists of 211,504 shares of common stock owned by Venrock Associates, 941,249 shares of common stock owned by Venrock Associates III, L.P. and 23,531 shares of common stock owned by Venrock Entrepreneurs Fund III, L.P.

³ This percentage is calculated based upon 26,198,513 shares of the Issuer's common stock outstanding as of September 30, 2009, as set forth in the Issuer's most recent Form 10-Q for the quarter ended September 30, 2009, filed with the Securities and Exchange Commission on November 9, 2009.

Introductory Note: This Statement on Schedule 13G is filed on behalf of Venrock Associates, a limited partnership organized under the laws of the State of New York (Venrock), Venrock Associates III, L.P., a limited partnership organized under the laws of the State of New York (Venrock III) and Venrock Entrepreneurs Fund III, L.P., a limited partnership organized under the laws of the State of New York (Entrepreneurs Fund III and collectively with Venrock and Venrock III, the Venrock Entities) in respect of shares of common stock of Infinity Pharmaceuticals, Inc.

Item 1.

(a) Name of Issuer

Infinity Pharmaceuticals, Inc.

(b) Address of Issuer's Principal Executive Offices

780 Memorial Drive
Cambridge, MA 02139

Item 2.

(a) Name of Person Filing

Venrock Associates

Venrock Associates III, L.P.

Venrock Entrepreneurs Fund III, L.P.

(b) Address of Principal Business Office or, if none, Residence

New York Office:

530 Fifth Avenue
22nd Floor
New York, NY 10036

Palo Alto Office:

3340 Hillview Avenue
Palo Alto, CA 94304

Cambridge Office:

55 Cambridge Parkway
Suite 100
Cambridge, MA 02142

(c) Citizenship

Each of Venrock, Venrock III and Entrepreneurs Fund III are limited partnerships organized in the State of New York.

(d) Title of Class of Securities

Common Stock

(e) CUSIP Number

45665G303

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

Item 4. Ownership

(a) and (b) Venrock beneficially owns 211,504 shares of common stock, or 0.8% of the outstanding shares of common stock. Venrock III owns 941,249 shares of common stock, or 3.6% of the outstanding shares of common stock.

Entrepreneurs Fund III owns 23,531 shares of common stock, or 0.1% of the outstanding shares of common stock.

(c) Each of the Venrock Entities has sole power to vote or to direct the vote of no shares of common stock, sole power to dispose or to direct the disposition of no shares of the common stock, shared power to vote or to direct the vote of 1,176,284 shares of the common stock and shared power to dispose or to direct the disposition of 1,176,284 shares of the common stock.

Item 5. Ownership of Five Percent or Less of a Class

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities, check the following .

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 or Control Person.

Not Applicable

Item 8. Identification and Classification of Members of the Group

This Schedule is being filed pursuant to Rule 13d-1(d). The identities of each of the Venrock Entities are stated in Item 2(a).

Item 9. Notice of Dissolution of a Group

Not Applicable

Item 10. Certification

Not Applicable

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this Statement is true, complete and correct.

Dated: February 16, 2010

VENROCK ASSOCIATES

By: A General Partner

VENROCK ASSOCIATES III, L.P.

By: Venrock Management III, LLC

Its: General Partner

VENROCK ENTREPRENEURS FUND III,

L.P.

By: VEF Management III, LLC

Its: General Partner

By: /s/ David L. Stepp

Authorized Signatory

EXHIBITS

A: Joint Filing Agreement

Page 8 of 9