

INFINITY PHARMACEUTICALS, INC.

Form SC 13G

February 12, 2007

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

**SCHEDULE 13G**

(Rule 13d-102)

INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT TO RULES 13d-1 (b)  
AND (c) AND AMENDMENTS THERETO FILED PURSUANT TO 13d-2 (b)  
(Amendment No. \_\_\_\_\_)\*

Infinity Pharmaceuticals, Inc.

(Name of Issuer)

Common Stock

(Title of Class of Securities)

45665G 30 3

(CUSIP Number)

December 31, 2006

(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).

**Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB control number.**



CUSIP No. 45665G 30 3

Page 2 of 13 Pages

NAMES OF REPORTING PERSONS:

1

Prospect Venture Partners II, L.P.

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

IRS No. 77-0565416

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

2

(a)

(b)  (1)

SEC USE ONLY:

3

CITIZENSHIP OR PLACE OF ORGANIZATION:

4

Delaware, United States of America

SOLE VOTING POWER:

5

NUMBER OF 0 shares

SHARED VOTING POWER:

6

SHARES BENEFICIALLY OWNED BY 1,417,477 shares of Common Stock (2)

SOLE DISPOSITIVE POWER:

7

EACH REPORTING PERSON 0 shares

SHARED DISPOSITIVE POWER:

8

WITH: 1,417,477 shares of Common Stock (2)

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

9

1,417,477 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

7.28% (3)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

PN

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) The shares are held by PVP II. PMC II serves as the general partner of PVP II, and owns no securities of the Issuer directly. Schnell, Barkas, Hirsch and Tananbaum are managing directors of PMC II and share voting and dispositive power over the shares held by PVP II, however, they disclaim beneficial ownership of the shares held by PVP II, except to the extent of their pecuniary interests therein. The information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on

Schedule 13G is provided as of December 31, 2006.

- (3) This percentage is calculated based upon 19,471,694 shares of the Issuer's common stock outstanding (as of September 30, 2006), as set forth in the Issuer's most recent 10-Q, filed with the Securities and Exchange Commission on November 9, 2006.
-

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**1** NAMES OF REPORTING PERSONS:

Prospect Management Co. II, L.L.C.

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

IRS No. 77-0565417

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

(a)

(b)  (1)

**3** SEC USE ONLY:

**4** CITIZENSHIP OR PLACE OF ORGANIZATION:

Delaware, United States of America

**5** SOLE VOTING POWER:

NUMBER OF  
SHARES  
BENEFICIALLY  
OWNED BY

0 shares

**6** SHARED VOTING POWER:

1,417,477 shares of Common Stock (2)

**7** SOLE DISPOSITIVE POWER:

EACH  
REPORTING  
PERSON

0 shares

**8** SHARED DISPOSITIVE POWER:

1,417,477 shares of Common Stock (2)

**9** AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

1,417,477 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

7.28% (3)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

OO

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) The shares are held by PVP II. PMC II serves as the general partner of PVP II, and owns no securities of the Issuer directly. Schnell, Barkas, Hirsch and Tananbaum are managing directors of PMC II and share voting and dispositive power over the shares held by PVP II, however, they disclaim beneficial ownership of the shares held by PVP II, except to the extent of their pecuniary interests therein. The information with respect to the ownership of the Common Stock of the Issuer by persons filing this statement

on Schedule  
13G is provided  
as of December  
31, 2006.

- (3) This percentage  
is calculated  
based upon  
19,471,694  
shares of the  
Issuer's common  
stock  
outstanding (as  
of  
September 30,  
2006), as set  
forth in the  
Issuer's most  
recent 10-Q,  
filed with the  
Securities and  
Exchange  
Commission on  
November 9,  
2006.
-

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NAMES OF REPORTING PERSONS:

1

Prospect Venture Partners, L.P.

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

IRS No. 77-0469542

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

2

(a)

(b)  (1)

SEC USE ONLY:

3

CITIZENSHIP OR PLACE OF ORGANIZATION:

4

Delaware, United States of America

SOLE VOTING POWER:

5

NUMBER OF 0 shares

SHARED VOTING POWER:

6

SHARES BENEFICIALLY OWNED BY 684,921 shares of Common Stock (2)

SOLE DISPOSITIVE POWER:

7

EACH REPORTING PERSON 0 shares

SHARED DISPOSITIVE POWER:

8

WITH: 684,921 shares of Common Stock (2)

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

9

684,921 shares of Common Stock (2)

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

3.52% (3)

TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

12

PN

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) The shares are held by PVP. PMC serves as the general partner of PVP, and owns no securities of the Issuer directly. Schnell and Barkas are managing directors of PMC and share voting and dispositive power over the shares held by PVP, however, they disclaim beneficial ownership of the shares held by PVP, except to the extent of their pecuniary interests therein. The information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on Schedule 13G is provided as of December 31,

2006.

- (3) This percentage is calculated based upon 19,471,694 shares of the Issuer's common stock outstanding (as of September 30, 2006), as set forth in the Issuer's most recent 10-Q, filed with the Securities and Exchange Commission on November 9, 2006.
-

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**NAMES OF REPORTING PERSONS:**

**1**

Prospect Management Co., L.L.C.

**I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):**

IRS No. 77-0460364

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

**2**

(a)

(b)  (1)

**SEC USE ONLY:**

**3**

**CITIZENSHIP OR PLACE OF ORGANIZATION:**

**4**

Delaware, United States of America

**SOLE VOTING POWER:**

**5**

NUMBER OF 0 shares

**SHARED VOTING POWER:**

**6**

SHARES BENEFICIALLY OWNED BY 684,921 shares of Common Stock (2)

**SOLE DISPOSITIVE POWER:**

**7**

EACH REPORTING PERSON 0 shares

**SHARED DISPOSITIVE POWER:**

**8**

WITH: 684,921 shares of Common Stock (2)

**AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:**

**9**

684,921 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

3.52% (3)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

OO

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) The shares are held by PVP. PMC serves as the general partner of PVP, and owns no securities of the Issuer directly. Schnell and Barkas are managing directors of PMC and share voting and dispositive power over the shares held by PVP, however, they disclaim beneficial ownership of the shares held by PVP, except to the extent of their pecuniary interests therein. The information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on Schedule 13G is provided as of December 31,

2006.

- (3) This percentage is calculated based upon 19,471,694 shares of the Issuer's common stock outstanding (as of September 30, 2006), as set forth in the Issuer's most recent 10-Q, filed with the Securities and Exchange Commission on November 9, 2006.
-

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NAMES OF REPORTING PERSONS:

1

David Schnell

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

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

2

(a)

(b)  (1)

SEC USE ONLY:

3

CITIZENSHIP OR PLACE OF ORGANIZATION:

4

United States of America

SOLE VOTING POWER:

5

NUMBER OF 26,938 shares of Common Stock

SHARED VOTING POWER:

6

SHARES BENEFICIALLY OWNED BY 2,102,398 shares of Common Stock (2)

SOLE DISPOSITIVE POWER:

7

EACH REPORTING PERSON 26,938 shares of Common Stock

SHARED DISPOSITIVE POWER:

8

WITH: 2,102,398 shares of Common Stock (2)

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

9

2,129,336 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

10.94% (3)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

IN

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) Includes (i) 1,417,477 shares held by PVP II; and (ii) 684,921 shares held by PVP. PMC serves as the general partner of PVP. PMC II serves as the general partner of PVP II. PMC and PMC II own no securities of the Issuer directly. Schnell and Barkas are managing directors of PMC and share voting and dispositive power over the shares held by PVP, and Schnell, Barkas, Hirsch and Tanabaum are managing directors of PMC II and share voting and dispositive power over shares held by PVP II; however, they

disclaim  
beneficial  
ownership of  
shares held by  
PVP and PVP  
II, except to the  
extent of their  
pecuniary  
interests therein.  
The information  
with respect to  
the ownership  
of the Common  
Stock of the  
Issuer by the  
persons filing  
this statement  
on  
Schedule 13G is  
provided as of  
December 31,  
2006.

- (3) This percentage  
is calculated  
based upon  
19,471,694  
shares of the  
Issuer's common  
stock  
outstanding (as  
of  
September 30,  
2006), as set  
forth in the  
Issuer's most  
recent 10-Q,  
filed with the  
Securities and  
Exchange  
Commission on  
November 9,  
2006.
-

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NAMES OF REPORTING PERSONS:

1 Alexander E. Barkas

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

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

2  
(a)   
(b)  (1)

SEC USE ONLY:

3

CITIZENSHIP OR PLACE OF ORGANIZATION:

4  
United States of America

SOLE VOTING POWER:

5  
NUMBER OF 26,938 shares of Common Stock

SHARED VOTING POWER:

6  
SHARES BENEFICIALLY OWNED BY 2,102,398 shares of Common Stock (2)

SOLE DISPOSITIVE POWER:

7  
EACH REPORTING PERSON 26,938 shares of Common Stock

SHARED DISPOSITIVE POWER:

8  
WITH: 2,102,398 shares of Common Stock (2)

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

9

2,129,336 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

10.94% (3)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

IN

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) Includes (i) 1,417,477 shares held by PVP II; and (ii) 684,921 shares held by PVP. PMC serves as the general partner of PVP. PMC II serves as the general partner of PVP II. PMC and PMC II own no securities of the Issuer directly. Schnell and Barkas are managing directors of PMC and share voting and dispositive power over the shares held by PVP, and Schnell, Barkas, Hirsch and Tanabaum are managing directors of PMC II and share voting and dispositive power over shares held by PVP II; however, they

disclaim  
beneficial  
ownership of  
shares held by  
PVP and PVP  
II, except to the  
extent of their  
pecuniary  
interests therein.  
The information  
with respect to  
the ownership  
of the Common  
Stock of the  
Issuer by the  
persons filing  
this statement  
on  
Schedule 13G is  
provided as of  
December 31,  
2006.

- (3) This percentage  
is calculated  
based upon  
19,471,694  
shares of the  
Issuer's common  
stock  
outstanding (as  
of  
September 30,  
2006), as set  
forth in the  
Issuer's most  
recent 10-Q,  
filed with the  
Securities and  
Exchange  
Commission on  
November 9,  
2006.
-

CUSIP No. 45665G 30 3

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NAMES OF REPORTING PERSONS:

1

Russell C. Hirsch

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

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

2

(a)

(b)  (1)

SEC USE ONLY:

3

CITIZENSHIP OR PLACE OF ORGANIZATION:

4

Delaware, United States of America

SOLE VOTING POWER:

5

NUMBER OF 26,938 shares of Common Stock

SHARED VOTING POWER:

6

SHARES BENEFICIALLY OWNED BY 1,417,477 shares of Common Stock (2)

SOLE DISPOSITIVE POWER:

7

EACH REPORTING PERSON 26,938 shares of Common Stock

SHARED DISPOSITIVE POWER:

8

WITH: 1,417,477 shares of Common Stock (2)

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

9

1,444,415 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

7.42% (3)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

IN

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell,

Barkas and Hirsch, collectively, the Prospect Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) The shares are held by PVP II. PMC II serves as the general partner of PVP II, and owns no securities of the Issuer directly. Schnell, Barkas, Hirsch and Tananbaum are managing directors of PMC II and share voting and dispositive power over the shares held by PVP II, however, they disclaim beneficial ownership of the shares held by PVP II, except to the extent of their pecuniary interests therein. The information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on

Schedule 13G is provided as of December 31, 2006.

- (3) This percentage is calculated based upon 19,471,694 shares of the Issuer's common stock outstanding (as of September 30, 2006), as set forth in the Issuer's most recent 10-Q, filed with the Securities and Exchange Commission on November 9, 2006.
-

CUSIP No. 45665G 30 3

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NAMES OF REPORTING PERSONS:

1

James B. Tananbaum

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY):

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

2

(a)

(b)  (1)

SEC USE ONLY:

3

CITIZENSHIP OR PLACE OF ORGANIZATION:

4

Delaware, United States of America

SOLE VOTING POWER:

5

NUMBER OF 30,000 shares of Common Stock (3)

SHARED VOTING POWER:

SHARES BENEFICIALLY OWNED BY 6

1,552,165 shares of Common Stock (2)

SOLE DISPOSITIVE POWER:

EACH REPORTING PERSON 7

30,000 shares of Common Stock (3)

SHARED DISPOSITIVE POWER:

WITH: 8

1,552,165 shares of Common Stock (2)

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON:

9

1,582,165 shares of Common Stock (2)

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

o

**11** PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9):

8.13% (4)

**12** TYPE OF REPORTING PERSON (SEE INSTRUCTIONS):

IN

(1) This Schedule 13G is filed by Prospect Venture Partners, L.P. ( PVP ), Prospect Venture Partners II, L.P. ( PVP II ), Prospect Management Co., L.L.C. ( PMC ), and Prospect Management Co. II, L.L.C. ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum, and together with PVP, PVP II, PMC, PMC II, Schnell, Barkas and Hirsch, collectively, the Prospect

Entities ). The Prospect Entities expressly disclaim status as a group for purposes of this Schedule 13G.

- (2) Includes (i) 1,417,477 shares held by PVP II; and (ii) 134,688 shares held by the Tananbaum Family Trust. PMC II serves as the general partner of PVP II, and owns no securities of the Issuer directly. Schnell, Barkas, Hirsch and Tananbaum are managing directors of PMC II and share voting and dispositive power over the shares held by PVP II, however, they disclaim beneficial ownership of the shares held by PVP II, except to the extent of their pecuniary interests therein. The information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on Schedule 13G is provided as of

December 31,  
2006.

- (3) Represents an option to acquire up to 30,000 shares of the Issuer's Common Stock at a price of \$15.04 per share.
- (4) This percentage is calculated based upon 19,471,694 shares of the Issuer's common stock outstanding (as of September 30, 2006), as set forth in the Issuer's most recent 10-Q, filed with the Securities and Exchange Commission on November 9, 2006.
-

Introductory Note: This Statement on Schedule 13G is filed on behalf of Prospect Venture Partners, L.P., a limited partnership organized under the laws of the State of Delaware ( PVP ), Prospect Venture Partners II, L.P., a limited partnership organized under the laws of the State of Delaware ( PVP II ), Prospect Management Co. L.L.C., a limited liability company organized under the laws of the State of Delaware ( PMC ), Prospect Management Co. II. L.L.C., a limited liability company organized under the laws of the State of Delaware ( PMC II ), David Schnell ( Schnell ), Alexander E. Barkas ( Barkas ), Russell C. Hirsch ( Hirsch ) and James B. Tananbaum ( Tananbaum ), 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, Massachusetts 02139

**Item 2**

(a) Name of Person(s) Filing:

Prospect Venture Partners, L.P. ( PVP )  
Prospect Venture Partners II, L.P. ( PVP II )  
Prospect Management Co., L.L.C. ( PMC )  
Prospect Management Co. II, L.L.C. ( PMC II )  
David Schnell ( Schnell )  
Alexander E. Barkas ( Barkas )  
Russell C. Hirsch ( Hirsch )  
James B. Tananbaum ( Tananbaum )

(b) Address of Principal Business Office: c/o Prospect Venture Partners  
435 Tasso Street, Suite 200  
Palo Alto, California 94301

(c) Citizenship:

Entities:	PVP	-	Delaware
	PVP II	-	Delaware
	PMC	-	Delaware
	PMC II	-	Delaware

Individuals:	Schnell	-	United States of America
	Barkas	-	United States of America
	Hirsch	-	United States of America
	Tananbaum	-	United States of America

(d) Title of Class of Securities: Common Stock

(e) CUSIP Number: 45665G 30 3

**Item 3** Not applicable.



**Item 4 Ownership.**

The following information with respect to the ownership of the Common Stock of the Issuer by the persons filing this statement on Schedule 13G is provided as of December 31, 2006:

	<b>Shares Held</b>	<b>Sole Voting</b>	<b>Shared Voting</b>	<b>Sole Dispositive</b>	<b>Shared Dispositive</b>	<b>Beneficial Ownership</b>	<b>Percentage of Class (4)</b>
<b>Prospect Entities</b>	<b>Directly</b>	<b>Power</b>	<b>Power</b>	<b>Power</b>	<b>Power</b>	<b>Ownership</b>	
Prospect Venture Partners, L.P.	684,921	0	684,921	0	684,921	684,921	3.52%
Prospect Venture Partners II, L.P.	1,417,477	0	1,417,477	0	1,417,477	1,417,477	7.28%
Prospect Management Co., L.L.C. (1)	0	0	684,921	0	684,921	684,921	3.52%
Prospect Management Co. II, L.L.C. (2)	0	0	1,417,477	0	1,417,477	1,417,477	7.28%
David Schnell (1)(2)	26,938	26,938	2,102,398	26,938	2,102,398	2,129,336	10.94%
Alexander E. Barkas (1)(2)	26,938	26,938	2,102,398	26,938	2,102,398	2,129,336	10.94%
Russell C. Hirsch (2)	26,938	26,938	1,417,477	26,938	1,417,477	1,444,415	7.42%
James B. Tananbaum (2)	30,000 (3)	30,000 (3)	1,552,165 (5)	30,000 (3)	1,552,165 (5)	1,582,165	8.13%

(1) Prospect Management Co., L.L.C. ( PMC ) serves as the general partner of Prospect Venture Partners, L.P., and owns no securities of the Issuer directly. Schnell and Barkas serve as Managing Directors of

PMC.

- (2) Prospect Management Co. II, L.L.C. ( PMC II ) serves as the general partner of Prospect Venture Partners II, L.P., and owns no securities of the Issuer directly. Schnell, Barkas, Tananbaum and Hirsch serve as Managing Directors of PMC II.
- (3) Represents an option to acquire up to 30,000 shares of the Issuer's Common Stock at a price of \$15.04 per share.
- (4) This percentage is calculated based upon 19,471,694 shares of the Issuer's common stock outstanding (as of September 30, 2006), as set forth in the Issuer's most recent 10-Q, filed with the Securities and Exchange Commission on November 9, 2006. (5) Includes (i) 1,417,477 shares held by PVP II,

and (ii)  
134,688 shares  
held by the  
Tananbaum  
Family Trust.

**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: o

**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.

**Item 9 Notice of Dissolution of 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 12, 2007

PROSPECT VENTURE PARTNERS, L.P.

By: Prospect Management Co., L.L.C.

Its: General Partner

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

PROSPECT MANAGEMENT CO., L.L.C.

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

PROSPECT VENTURE PARTNERS II, L.P.

By: Prospect Management Co. II, L.L.C.

Its: General Partner

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

PROSPECT MANAGEMENT CO. II, L.L.C.

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

/s/ Dave Markland

Dave Markland as Attorney-in-Fact for David Schnell

/s/ Dave Markland

Dave Markland as Attorney-in-Fact for Alexander E.  
Barkas

/s/ Dave Markland

Dave Markland as Attorney-in-Fact for Russell C. Hirsch

/s/ Dave Markland

Dave Markland as Attorney-in-Fact for James B.  
Tananbaum

**Exhibit(s):** A Joint Filing Statement

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EXHIBIT A  
JOINT FILING STATEMENT

We, the undersigned, hereby express our agreement that the attached Schedule 13G (or any amendments thereto) relating to the Common Stock of Infinity Pharmaceuticals, Inc. is filed on behalf of each of us.

Dated: February 12, 2007

PROSPECT VENTURE PARTNERS, L.P.

By: Prospect Management Co., L.L.C.  
Its: General Partner

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

PROSPECT MANAGEMENT CO., L.L.C.

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

PROSPECT VENTURE PARTNERS II, L.P.

By: Prospect Management Co. II, L.L.C.  
Its: General Partner

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

PROSPECT MANAGEMENT CO. II, L.L.C.

By: /s/ Dave Markland

Name: Dave Markland as Attorney-in-Fact

/s/ Dave Markland

Dave Markland as Attorney-in-Fact for David Schnell

*/s/ Dave Markland*

Dave Markland as Attorney-in-Fact for Alexander E. Barkas

*/s/ Dave Markland*

Dave Markland as Attorney-in-Fact for Russell C. Hirsch

*/s/ Dave Markland*

Dave Markland as Attorney-in-Fact for James B. Tananbaum

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