Santabarbara Pedro Form 3 December 13, 2010

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

OMB APPROVAL

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SECURITIES

INITIAL STATEMENT OF BENEFICIAL OWNERSHIP OF

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section

30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting 2. Date of Event Requiring 3. Issuer Name and Ticker or Trading Symbol Person * Statement INFINITY PHARMACEUTICALS, INC. [INFI] A Santabarbara Pedro (Month/Day/Year) 12/10/2010 (Last) (First) (Middle) 4. Relationship of Reporting 5. If Amendment, Date Original Person(s) to Issuer Filed(Month/Day/Year) C/O INFINITY (Check all applicable) PHARMACEUTICALS, INC.. 780 MEMORIAL 10% Owner Director DRIVE _X__ Officer Other (give title below) (specify below) (Street) 6. Individual or Joint/Group Chief Medical Officer Filing(Check Applicable Line) _X_ Form filed by One Reporting Person CAMBRIDGE, MAÂ 02139 Form filed by More than One Reporting Person (City) (State) (Zip) Table I - Non-Derivative Securities Beneficially Owned 4. Nature of Indirect Beneficial 1. Title of Security 2. Amount of Securities Beneficially Owned Ownership Ownership (Instr. 4) (Instr. 4) (Instr. 5) Form: Direct (D) or Indirect (I) (Instr. 5) Reminder: Report on a separate line for each class of securities beneficially SEC 1473 (7-02) owned directly or indirectly. Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a

Table II - Derivative Securities Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

currently valid OMB control number.

1. Title of Derivative Security 3. Title and Amount of 5. 6. Nature of Indirect 2. Date Exercisable and 4. **Expiration Date** Securities Underlying Conversion Ownership Beneficial Ownership (Instr. 4) (Month/Day/Year) or Exercise Form of (Instr. 5) Derivative Security (Instr. 4) Price of Derivative Derivative Security:

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	Date Exercisable	Expiration Date	Title	Amount or Number of Shares	Security	Direct (D) or Indirect (I) (Instr. 5)	
Stock Option (Right to Buy)	(1)	11/04/2020	Common Stock	160,000	\$ 6.5	D	Â

Reporting Owners

Reporting Owner Name / Address	Relationships				
1	Director	10% Owner	Officer	Other	
Santabarbara Pedro C/O INFINITY PHARMACEUTICALS, INC. 780 MEMORIAL DRIVE CAMBRIDGE, MA 02139	Â	Â	Chief Medical Officer	Â	

Signatures

/s/ Pedro
Santabarbara

**Signature of Reporting Person

Date

Explanation of Responses:

- * If the form is filed by more than one reporting person, see Instruction 5(b)(v).
- ** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).
- (1) The option vests as to one quarter of the shares on November 1, 2011 and as to the remaining shares in 36 equal monthly installments thereafter.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *See* Instruction 6 for procedure. Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB number.

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