

Leheny A. Rachel  
 Form 3  
 February 23, 2010

**FORM 3 UNITED STATES SECURITIES AND EXCHANGE COMMISSION**  
**Washington, D.C. 20549**

OMB APPROVAL

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**INITIAL STATEMENT OF BENEFICIAL OWNERSHIP OF SECURITIES**

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 Person \*

Â Leheny A. Rachel  
 (Last) (First) (Middle)

2. Date of Event Requiring Statement

(Month/Day/Year)  
 02/23/2010

3. Issuer Name and Ticker or Trading Symbol  
 Anthera Pharmaceuticals Inc [ANTH]

4. Relationship of Reporting Person(s) to Issuer

5. If Amendment, Date Original Filed(Month/Day/Year)

C/O ANTHERA  
 PHARMACEUTICALS,  
 INC.,Â 25801 INDUSTRIAL  
 BOULEVARD, SUITE B

(Street)

(Check all applicable)

Director  10% Owner  
 Officer  Other  
 (give title below) (specify below)

HAYWARD,Â CAÂ 94545

(City) (State) (Zip)

6. Individual or Joint/Group Filing(Check Applicable Line)  
 Form filed by One Reporting Person  
 Form filed by More than One Reporting Person

**Table I - Non-Derivative Securities Beneficially Owned**

1. Title of Security  
 (Instr. 4)

2. Amount of Securities Beneficially Owned  
 (Instr. 4)

3. Ownership Form:  
 Direct (D)  
 or Indirect (I)  
 (Instr. 5)

4. Nature of Indirect Beneficial Ownership  
 (Instr. 5)

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

SEC 1473 (7-02)

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

1. Title of Derivative Security  
 (Instr. 4)

2. Date Exercisable and Expiration Date  
 (Month/Day/Year)

3. Title and Amount of Securities Underlying Derivative Security  
 (Instr. 4)

4. Conversion or Exercise Price of Derivative

5. Ownership Form of Derivative Security:

6. Nature of Indirect Beneficial Ownership  
 (Instr. 5)

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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)	Â (1)	02/18/2019	Common Stock	14,602	\$ 1.51	D (2) (3)	Â
Series B-2 Convertible Preferred Stock	Â (4)	Â (4)	Common Stock	481,033	\$ (5)	I	See footnote (6) (7)
Stock Purchase Warrant	Â (8)	Â (8)	Common Stock	120,258	\$ 1.34	I	See footnote (9) (10)

## Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
Leheny A. Rachel C/O ANTHERA PHARMACEUTICALS, INC. 25801 INDUSTRIAL BOULEVARD, SUITE B HAYWARD, CA 94545	Â X	Â	Â	Â

## Signatures

/s/ Mitzi Chang, by power of attorney for A. Rachel Leheny,  
Ph.D. 02/23/2010

\_\_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) 100% of the shares subject to this Stock Option are immediately exercisable. However, all unvested shares underlying this Stock Option are subject to a right of repurchase held by the Issuer, which will lapse according to the following vesting schedule: 25% of the total number of shares vest on the first anniversary of the August 12, 2008 vesting start date (the "Vesting Start Date") and pro-rata monthly thereafter. This Stock Option is completely vested on the fourth anniversary of the Vesting Start Date
- (2) The Reporting Person is (i) a Managing Director of Caxton Advantage Venture Partners, L.P., which is the General Partner of Caxton Advantage Life Sciences Fund, L.P. and (ii) a member of Advantage Life Sciences Partners LLC. Caxton Advantage Venture Partners, L.P. has voting power with respect to 50% of such shares. Decisions by Caxton Advantage Venture Partners, L.P. with respect to such shares are made by Advantage Life Sciences Partners, LLC, the Managing General Partner of Caxton Advantage Venture Partners, L.P., together with the investment committee of Caxton Advantage Venture Partners, L.P.
- (3) The Reporting Person has the authority to take action on behalf of Advantage Life Sciences Partners, LLC as a member of Advantage Life Sciences Partners, LLC. The Reporting Person disclaims beneficial ownership, except to the extent of her proportionate pecuniary interest, either directly, or indirectly through Caxton Advantage Venture Partners, L.P. (or through any other entity which is a limited partner in Caxton Advantage Life Sciences Fund, L.P.), in Caxton Advantage Life Sciences Fund, L.P.
- (4) The Series B-2 Convertible Preferred Stock is convertible on a one-for-one basis at any time at the holder's election and has no expiration date.
- (5) Not applicable.
- (6) The Series B-2 Convertible Preferred Stock is held by Caxton Advantage Life Sciences Fund, L.P. The Reporting Person is (i) a Managing Director of Caxton Advantage Venture Partners, L.P., which is the General Partner of Caxton Advantage Life Sciences Fund, L.P. and (ii) a member of Advantage Life Sciences Partners LLC. Caxton Advantage Venture Partners, L.P. has voting and investment power with respect to such shares. Decisions by Caxton Advantage Venture Partners, L.P. with respect to such shares are made by Advantage Life Sciences Partners, LLC, the Managing General Partner of Caxton Advantage Venture Partners, L.P., together with the

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investment committee of Caxton Advantage Venture Partners, L.P.

(7) The Reporting Person has the authority to take action on behalf of Advantage Life Sciences Partners, LLC as a member of Advantage Life Sciences Partners, LLC. The Reporting Person disclaims beneficial ownership, except to the extent of her proportionate pecuniary interest, either directly, or indirectly through Caxton Advantage Venture Partners, L.P. (or through any other entity which is a limited partner in Caxton Advantage Life Sciences Fund, L.P.), in Caxton Advantage Life Sciences Fund, L.P.

(8) This Warrant was issued on August 12, 2008 and is immediately exercisable. The Warrant will expire upon the occurrence of certain events, including the closing of the Issuer's initial public offering.

(9) The Warrant is held by Caxton Advantage Life Sciences Fund, L.P. The Reporting Person is (i) a Managing Director of Caxton Advantage Venture Partners, L.P., which is the General Partner of Caxton Advantage Life Sciences Fund, L.P. and (ii) a member of Advantage Life Sciences Partners LLC. Caxton Advantage Venture Partners, L.P. has voting and investment power with respect to such shares. Decisions by Caxton Advantage Venture Partners, L.P. with respect to such shares are made by Advantage Life Sciences Partners, LLC, the Managing General Partner of Caxton Advantage Venture Partners, L.P., together with the investment committee of Caxton Advantage Venture Partners, L.P.

(10) The Reporting Person has the authority to take action on behalf of Advantage Life Sciences Partners, LLC as a member of Advantage Life Sciences Partners, LLC. The Reporting Person disclaims beneficial ownership, except to the extent of her proportionate pecuniary interest, either directly, or indirectly through Caxton Advantage Venture Partners, L.P. (or through any other entity which is a limited partner in Caxton Advantage Life Sciences Fund, L.P.), in Caxton Advantage Life Sciences Fund, L.P.

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#### Remarks:

Exhibit List

Â Â Exhibit 24.1 - Power of Attorney

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.