

Mirati Therapeutics, Inc.  
Form SC 13G  
February 14, 2014

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SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

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SCHEDULE 13G

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

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Mirati Therapeutics, Inc.  
(Name of Issuer)

Common Stock, par value \$0.001 per share  
(Title of Class of Securities)

60468T105  
(CUSIP Number)

December 31, 2013  
(Date of Event Which Requires Filing of this Statement)

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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.

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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).

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NAME OF REPORTING PERSONS

1

OrbiMed Advisors LLC

CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions)

2

- (a)
- (b)

SEC USE ONLY

3

CITIZENSHIP OR PLACE OF ORGANIZATION

4

Delaware

SOLE VOTING POWER

5

- 0 -

NUMBER OF  
SHARES  
BENEFICIALLY  
OWNED BY  
EACH  
REPORTING  
PERSON

SHARED VOTING POWER

6

1,619,131

SOLE DISPOSITIVE POWER

7

- 0 -

WITH

SHARED DISPOSITIVE POWER

8

1,619,131

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

9

1,619,131

CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)

10

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

11

11.90%(1)

TYPE OF REPORTING PERSON (See Instructions)

12

IA

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(1) This percentage is based upon 13,261,862 shares outstanding as of November 7, 2013, as set forth in Mirati Therapeutics, Inc.'s (the "Issuer") Form 10-Q filed with the Securities and Exchange Commission on November 12, 2013 and includes 344,799 shares issuable upon the exercise of warrants.

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NAME OF REPORTING PERSONS

1

OrbiMed Capital GP IV LLC

CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions)

2

(a)   
 (b)

SEC USE ONLY

3

CITIZENSHIP OR PLACE OF ORGANIZATION

4

Delaware

SOLE VOTING POWER

5

- 0 -

NUMBER OF  
 SHARES

SHARED VOTING POWER

BENEFICIALLY  
 OWNED BY  
 EACH  
 REPORTING  
 PERSON

6

1,619,131

SOLE DISPOSITIVE POWER

7

- 0 -

WITH

SHARED DISPOSITIVE POWER

8

1,619,131

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

9

1,619,131

CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)

10

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

11

11.90%(1)

TYPE OF REPORTING PERSON (See Instructions)

12

OO

(1) This percentage is based upon 13,261,862 shares outstanding as of November 7, 2013, as set forth in the Issuer's Form 10-Q filed with the Securities and Exchange Commission on November 12, 2013 and includes 344,799 shares issuable upon the exercise of warrants.

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NAME OF REPORTING PERSONS

1

Samuel D. Isaly

CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (See Instructions)

2

- (a)
- (b)

SEC USE ONLY

3

CITIZENSHIP OR PLACE OF ORGANIZATION

4

United States

SOLE VOTING POWER

5

- 0 -

NUMBER OF  
SHARES  
BENEFICIALLY  
OWNED BY  
EACH  
REPORTING  
PERSON

SHARED VOTING POWER

6

1,619,131

SOLE DISPOSITIVE POWER

7

- 0 -

WITH

SHARED DISPOSITIVE POWER

8

1,619,131

AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

9

1,619,131

CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES (See Instructions)

10

PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

11

11.90%(1)

TYPE OF REPORTING PERSON (See Instructions)

12

IN

(1) This percentage is based upon 13,261,862 shares outstanding as of November 7, 2013, as set forth in the Issuer's Form 10-Q filed with the Securities and Exchange Commission on November 12, 2013 and includes 344,799 shares issuable upon the exercise of warrants.

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- Item 1 (a). Name of Issuer:
- Mirati Therapeutics, Inc.
- Item 1 (b). Address of Issuer's Principal Executive Offices:
- 9363 Towne Centre Drive, Suite 200  
San Diego, CA  
92121
- Item 2 (a). Name of Person Filing:
- This Schedule 13G is being filed by each of the following persons (each, a "Reporting Person" and together, the "Reporting Persons"):
- (i) OrbiMed Capital GP IV LLC ("GP IV")
  - (ii) OrbiMed Advisors LLC ("Advisors")
  - (iii) Samuel D. Isaly ("Isaly")
- See Exhibit A for the Reporting Persons' agreement for a joint filing of a single statement on their behalf.
- Item 2 (b). Address of Principal Business Office:
- The address of the principal business office of each of GP IV, Advisors and Isaly is 601 Lexington Avenue, 54th Floor, New York, New York 10022.
- Item 2 (c). Citizenship:
- Please refer to Item 4 on each cover sheet for each filing person.
- Item 2 (d). Title of Class of Securities:
- Common Stock, par value \$0.001 per share (the "Common Stock").
- Item 2 (e). CUSIP Number:
- 60468T105
- 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:

GP IV is the General Partner of OrbiMed Private Investments IV, LP (“OPI IV”), which beneficially owns 1,274,332 shares of Common Stock (“Shares”) and warrants to purchase 344,799 Shares. Advisors is an investment advisor in accordance with § 240.13d-1(b)(1)(ii)(E) and the Managing Member of GP IV. Isaly is the Managing Member of Advisors and a control person in accordance with § 240.13d-1(b)(1)(ii)(G). On the basis of these relationships, GP IV, Advisors and Isaly may be deemed to share beneficial ownership of the Shares and warrants to purchase Shares directly owned by OPI IV.

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- (a) Amount beneficially owned: See the response(s) to Item 9 on the attached cover page(s).
- (b) Percent of class: See the response(s) to Item 11 on the attached cover page(s).
- (c) Number of shares as to which such person has:
- (i) Sole power to vote or to direct the vote: See the response(s) to Item 5 on the attached cover page(s).
  - (ii) Shared power to vote or to direct the vote: See the response(s) to Item 6 on the attached cover page(s).
  - (iii) Sole power to dispose or to direct the disposition of: See the response(s) to Item 7 on the attached cover page(s).
  - (iv) Shared power to dispose or to direct the disposition of: See the response(s) to Item 8 on the attached cover page(s).

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.

See Item 4.

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.

Not applicable.

Item 9. Notice of Dissolution of Group.

Not applicable.

Item 10. Certifications.

Not applicable.

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SIGNATURES

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.

February 14, 2014

ORBIMED ADVISORS LLC

By: /s/ Samuel D. Isaly  
Name: Samuel D. Isaly  
Title: Managing Member

ORBIMED CAPITAL GP IV LLC

By: OrbiMed Advisors LLC, its Managing  
Member

By: /s/ Samuel D. Isaly  
Name: Samuel D. Isaly  
Title: Managing Member

SAMUEL D. ISALY

By: /s/ Samuel D. Isaly  
Name: Samuel D. Isaly

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