

Mirati Therapeutics, Inc.  
Form SC 13G/A  
February 09, 2017  
SECURITIES  
AND  
EXCHANGE  
COMMISSION  
Washington,  
D.C. 20549

SCHEDULE  
13G/A

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

Mirati  
Therapeutics,  
Inc.  
(Name of  
Issuer)

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

60468T105  
(CUSIP  
Number)

December 31,  
2016  
(Date of Event  
Which Requires  
Filing of This  
Statement)

Check the  
appropriate box  
to designate the  
rule pursuant to  
which this  
Schedule is  
filed:

þ Rule 13d-1(b)

¨ Rule 13d-1(c)

¨ Rule 13d-1(d)

(Page 1 of 8  
Pages)

---

\*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. 60468T105 13G/A Page 2 of 8 Pages

**1** NAME OF REPORTING PERSON

venBio Select Advisor  
 LLC

**2** CHECK THE APPROPRIATE BOX IF A MEMBER (b) OF A GROUP

**3** SEC USE ONLY CITIZENSHIP OR PLACE OF ORGANIZATION

**4**

Delaware

|   |   |
|---|---|
| <p>NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH:</p> | <p><b>5</b> SOLE VOTING POWER</p> <p>1,545,701 (including 37,500 shares of Common Stock issuable upon exercise of Warrants)</p> |
| <p><b>6</b></p>   | <p>SHARED VOTING POWER</p> <p>0</p> <p>SOLE DISPOSITIVE POWER</p>   |
| <p><b>7</b></p>   | <p>1,545,701 (including 37,500 shares of Common Stock issuable upon exercise of Warrants)</p>                                   |
| <p><b>8</b></p>   | <p>SHARED DISPOSITIVE</p>   |

POWER

0

AGGREGATE  
AMOUNT  
BENEFICIALLY  
OWNED BY EACH  
REPORTING PERSON

9

1,545,701  
(including 37,500 shares  
of Common Stock  
issuable upon exercise of  
Warrants)

CHECK BOX IF  
THE

10

AGGREGATE  
AMOUNT IN ..  
ROW (9)  
EXCLUDES

11

CERTAIN  
SHARES  
PERCENT OF CLASS  
REPRESENTED BY  
AMOUNT IN ROW (9)

12

7.7%  
TYPE OF REPORTING  
PERSON

OO, IA

CUSIP No. 60468T105 13G/A Page 3 of 8 Pages

**1** NAME OF REPORTING PERSON

Behzad Aghazadeh  
CHECK

**2** THE APPROPRIATE

BOX IF A MEMBER (b)

**3** OF A GROUP

SEC USE ONLY CITIZENSHIP OR

**4** PLACE OF ORGANIZATION

United States  
SOLE VOTING POWER

**5** 1,545,701  
(including 37,500 shares of Common Stock issuable upon exercise of Warrants)

NUMBER OF **6** SHARED VOTING POWER

BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH: 0 SOLE DISPOSITIVE POWER

**7** 1,545,701  
(including 37,500 shares of Common Stock issuable upon exercise of Warrants)

**8** SHARED DISPOSITIVE POWER

0

AGGREGATE  
AMOUNT  
BENEFICIALLY  
OWNED BY EACH  
REPORTING PERSON

9

1,545,701  
(including 37,500 shares  
of Common Stock  
issuable upon exercise of  
Warrants)

CHECK BOX IF  
THE

10

AGGREGATE  
AMOUNT IN ..  
ROW (9)

EXCLUDES  
CERTAIN  
SHARES  
PERCENT OF CLASS  
REPRESENTED BY  
AMOUNT IN ROW (9)

11

7.7%  
TYPE OF REPORTING  
PERSON

12

IN

CUSIP No. 60468T105 13G/A Page 4 of 8 Pages

**Item 1(a). NAME OF ISSUER**

Mirati Therapeutics, Inc. (the "Issuer")

**Item 1(b). ADDRESS OF ISSUER'S PRINCIPAL EXECUTIVE OFFICES**

9393 Towne Centre Drive, Suite 200, San Diego, California 92121

**Item 2(a). NAME OF PERSON FILING**

This statement is filed by: (i) venBio Select Advisor LLC, a Delaware limited liability company ("venBio"), which provides investment advisory and management services and has acquired the securities of the Issuer solely for investment purposes on behalf of venBio Select Fund LLC, a Delaware limited liability company, and certain managed accounts and (ii) Behzad Aghazadeh ("Dr. Aghazadeh," and together with venBio, the "Reporting Persons"), who serves as the portfolio manager and controlling person of venBio.

The filing of this statement should not be construed as an admission that any Reporting Person is, for purposes of Section 13 of the Act, the beneficial owner of the securities reported herein.

**Item 2(b). ADDRESS OF PRINCIPAL BUSINESS OFFICE OR, IF NONE, RESIDENCE**

The address of the business office of each of the Reporting Persons is 120 West 45th Street, Suite 2802, New York, NY 10036.

**Item 2(c). CITIZENSHIP**

venBio is a Delaware limited liability company. Dr. Aghazadeh is a United States citizen.

**Item 2(d). TITLE OF CLASS OF SECURITIES**

Common Stock, \$0.001 par value (the "Common Stock")

**Item 2(e). CUSIP NUMBER**

60468T105

**Item IF THIS STATEMENT IS FILED PURSUANT TO Rules 13d-1(b), OR 13d-2(b) OR (c), CHECK  
3. WHETHER THE PERSON FILING IS A:**

- (a) Broker or dealer registered under Section 15 of the Act;
- (b) Bank as defined in Section 3(a)(6) of the Act;
- (c) Insurance company as defined in Section 3(a)(19) of the Act;
- (d) Investment company registered under Section 8 of the Investment Company Act of 1940;



CUSIP No. 60468T105 13G/A Page 5 of 8 Pages

- (e) An investment adviser in accordance with Rule 13d-1(b)(1)(ii)(E);
- (f) An employee benefit plan or endowment fund in accordance with Rule 13d-1(b)(1)(ii)(F);
- (g) A parent holding company or control person in accordance with Rule 13d-1(b)(1)(ii)(G);
- (h) A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act;
- (i) A church plan that is excluded from the definition of an investment company under Section 3(c)(14) of the Investment Company Act;
- (j) A non-U.S. institution in accordance with Rule 13d-1(b)(1)(ii)(J);
- (k) Group, in accordance with Rule 13d-1(b)(1)(ii)(K).

If filing as a non-U.S. institution in accordance with Rule 13d-1(b)(1)(ii)(J), please

specify the type of institution: \_\_\_\_\_.

**Item 4. OWNERSHIP**

The information required by Items 4(a) - (c) is set forth in Rows 5 - 11 of the cover page and is incorporated herein by reference.

The percentage set forth in Row 11 of this Schedule 13G/A is calculated based upon 19,924,005 shares of Common Stock outstanding as of October 31, 2016, as reported in the Issuer's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2016 filed with the Securities and Exchange Commission on November 3, 2016, and assumes the exercise of the reported Warrants.

**Item 5. OWNERSHIP OF FIVE PERCENT OR LESS OF A CLASS**

Not applicable.

**Item 6. OWNERSHIP OF MORE THAN FIVE PERCENT ON BEHALF OF ANOTHER PERSON**

See Item 2. venBio Select Fund LLC has the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, more than 5% of the Common Stock.

**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.

**CUSIP No. 60468T105 13G/A Page 6 of 8 Pages**

**Item 8. IDENTIFICATION AND CLASSIFICATION OF MEMBERS OF THE GROUP**

Not applicable.

**Item 9. NOTICE OF DISSOLUTION OF GROUP**

Not applicable.

**Item 10. CERTIFICATION**

Each Reporting Person hereby makes the following certification:

By signing below the Reporting Person certifies that, to the best of his or its knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

**CUSIP No. 60468T105 13G/A Page 7 of 8 Pages**

**SIGNATURES**

After reasonable inquiry and to the best of his or its knowledge and belief, each of the undersigned certifies that the information set forth in this statement is true, complete and correct.

DATE: February 9, 2017

venBio Select Advisor LLC

/s/ Scott Epstein

Name: Scott Epstein

Title: Chief Financial Officer  
& Chief Compliance Officer

/s/ Behzad Aghazadeh

**BEHZAD AGHAZADEH**

**EXHIBIT 1**

JOINT FILING AGREEMENT  
PURSUANT TO RULE 13d-1(k)

The undersigned acknowledge and agree that the foregoing statement on Schedule 13G is filed on behalf of each of the undersigned and that all subsequent amendments to this statement on Schedule 13G shall be filed on behalf of each of the undersigned without the necessity of filing additional joint filing agreements. The undersigned acknowledge that each shall be responsible for the timely filing of such amendments, and for the completeness and accuracy of the information concerning him or it contained herein and therein, but shall not be responsible for the completeness and accuracy of the information concerning the others, except to the extent that he or it knows or has reason to believe that such information is inaccurate.

DATE: February 9, 2017

venBio Select Advisor LLC

/s/ Scott Epstein

Name: Scott Epstein

Title: Chief Financial Officer

& Chief Compliance Officer

/s/ Behzad Aghazadeh

**BEHZAD AGHAZADEH**