

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), (c), AND (d) AND AMENDMENTS THERE TO FILED
PURSUANT TO RULE 13d-2(b)

(Amendment No. 1)¹

OncoGenex Pharmaceuticals, Inc.

(Name of Issuer)

Common Stock, par value \$0.01 per share

(Title of Class of Securities)

68230A106

(CUSIP Number)

December 31, 2015

(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)

¹ 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*).

| | | |
|---|--|---|
| 1 | NAME OF REPORTING PERSON | |
| | Biotechnology Value Fund, L.P. | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION | |
| | Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 197,302 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 197,302 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | |
| | 197,302 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | |
| | Less than 1% (1) | |
| 12 | TYPE OF REPORTING PERSON | |
| | PN | |

(1) Represents 197,302 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by BVF. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

| | | |
|---|--|---|
| 1 | NAME OF REPORTING PERSON Biotechnology Value Fund II, L.P. | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 105,473 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 105,473 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 105,473 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) Less than 1%* | |
| 12 | TYPE OF REPORTING PERSON PN | |

(1) Represents 105,473 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by BVF 2. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

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|---|--|--|
| 1 | NAME OF REPORTING PERSON Investment 10, L.L.C. | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION Illinois | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 56,902 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 56,902 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 56,902 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) Less than 1% (1) | |
| 12 | TYPE OF REPORTING PERSON OO | |

(1) Represents 56,902 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by ILL10. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

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|---|--|--|
| 1 | NAME OF REPORTING PERSON | |
| | MSI BVF SPV, LLC | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION | |
| | Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 71,358 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 71,358 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON | |
| | 71,358 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) | |
| | Less than 1% (1) | |
| 12 | TYPE OF REPORTING PERSON | |
| | OO | |

(1) Represents 71,358 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by MSI. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

| | | |
|---|--|---|
| 1 | NAME OF REPORTING PERSON BVF Partners L.P. | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 431,035 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 431,035 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 431,035 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 1.4% (1) | |
| 12 | TYPE OF REPORTING PERSON PN, IA | |

(1) Represents 431,035 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by the Reporting Persons. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

| | | |
|---|---|---|
| 1 | NAME OF REPORTING PERSON BVF Inc. | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION Delaware | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 431,035 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 431,035 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 431,035 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 1.4% (1) | |
| 12 | TYPE OF REPORTING PERSON CO | |

(1) Represents 431,035 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by the Reporting Persons. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

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| 1 | NAME OF REPORTING PERSON Mark N. Lampert | |
| 2 | CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) <input checked="" type="checkbox"/> (b) <input type="checkbox"/> | |
| 3 | SEC USE ONLY | |
| 4 | CITIZENSHIP OR PLACE OF ORGANIZATION United States | |
| NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH | 5 | SOLE VOTING POWER 0 shares |
| | 6 | SHARED VOTING POWER 431,035 (1) |
| | 7 | SOLE DISPOSITIVE POWER 0 shares |
| | 8 | SHARED DISPOSITIVE POWER 431,035 (1) |
| 9 | AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 431,035 (1) | |
| 10 | CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES <input type="checkbox"/> | |
| 11 | PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9) 1.4%* | |
| 12 | TYPE OF REPORTING PERSON IN | |

(1) Represents 431,035 shares of Common Stock currently issuable upon the exercise of certain Warrants (defined below) held by the Reporting Persons. The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed all Warrants owned by BVF would be fully exercised, and the other Warrants held by BVF 2, ILL10 and MSI would also be fully exercised, as the exercise of the aggregate Warrants held by the Reporting Persons to acquire 431,035 shares of Common Stock would be below the aggregate 4.99% limitation.

Item 1(a). Name of Issuer:
OncoGenex Pharmaceuticals, Inc. a Delaware corporation (the "Issuer").

Item 1(b). Address of Issuer's Principal Executive Offices:
19820 North Creek Parkway,
Bothell, Washington 98011

Item 2(a). Name of Person Filing
Item 2(b). Address of Principal Business Office or, if None, Residence
Item 2(c). Citizenship

Biotechnology Value Fund, L.P. ("BVF")
1 Sansome Street, 30th Floor
San Francisco, California 94104
Citizenship: Delaware

Biotechnology Value Fund II, L.P. ("BVF2")
1 Sansome Street, 30th Floor
San Francisco, California 94104
Citizenship: Delaware

Investment 10, L.L.C. ("ILL10")
900 North Michigan Avenue, Suite 1100
Chicago, Illinois 60611
Citizenship: Illinois

MSI BVF SPV, LLC ("MSI")
c/o Magnitude Capital, LLC
200 Park Avenue, 56th Floor
New York, NY 10166
Citizenship: Delaware

BVF Partners L.P. ("Partners")
1 Sansome Street, 30th Floor
San Francisco, California 94104
Citizenship: Delaware

BVF Inc.
1 Sansome Street, 30th Floor
San Francisco, California 94104
Citizenship: Delaware

Mark N. Lampert ("Mr. Lampert")
1 Sansome Street, 30th Floor
San Francisco, California 94104
Citizenship: United States

Each of the foregoing is referred to as a "Reporting Person" and collectively as the "Reporting Persons."

Item 2(d). Title of Class of Securities:

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

Item 2(e). CUSIP Number:

68230A106

Item 3. If This Statement is Filed Pursuant to Rule 13d-1(b), or 13d-2(b) or (c), Check Whether the Person Filing is a:

Not applicable.

(a) Broker or dealer registered under Section 15 of the Exchange Act.

(b) Bank as defined in Section 3(a)(6) of the Exchange Act.

(c) Insurance company as defined in Section 3(a)(19) of the Exchange Act.

(d) Investment company registered under Section 8 of the Investment Company Act.

(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) Group, in accordance with Rule 13d-1(b)(1)(ii)(J).

(k) Group, in accordance with Rule 240.13d-1(b)(1)(ii)(K). If filing as a non-U.S. institution in accordance with Rule 240.13d-1(b)(1)(ii)(J), please specify the type of institution: _____

Item 4. Ownership

(a) Amount beneficially owned:

Effective on December 31, 2015, the Reporting Persons held warrants exercisable for an aggregate of approximately 431,035 shares of Common Stock (the "Warrants"). The Warrants may not be exercised if, after such exercise, the Reporting Persons would beneficially own, as determined in accordance with Section 13(d) of the Securities Exchange Act of 1934 (the "Exchange Act"), more than 4.99% of the number of shares of Common Stock then issued and outstanding. In providing beneficial ownership described herein, the Reporting Persons have assumed the aggregate Warrants owned by each of BVF, BVF2, ILL10 and MSI would be exercised to acquire 431,035 shares of Common Stock which would be below the aggregate 4.99% limitation.

As of the close of business on December 31, 2015, (i) BVF beneficially owned 197,302 shares of Common Stock (ii) BVF2 beneficially owned 105,473 shares of Common Stock (iii) ILL10 beneficially owned 56,902 shares of Common Stock and (iv) MSI beneficially owned 71,358 shares of Common.

Partners, as the general partner of BVF and BVF2, and the investment adviser of each of ILL10 and MSI, may be deemed to beneficially own the 431,035 shares of Common Stock beneficially owned in the aggregate by BVF, BVF2, ILL10 and MSI.

BVF Inc., as the general partner of Partners, may be deemed to beneficially own the 431,035 shares of Common Stock beneficially owned by Partners.

Mr. Lampert, as a director and officer of BVF Inc., may be deemed to beneficially own the 431,035 shares of Common Stock beneficially owned by BVF Inc.

The foregoing should not be construed in and of itself as an admission by any Reporting Person as to beneficial ownership of any shares of Common Stock owned by another Reporting Person. Each of Partners, BVF Inc. and Mr. Lampert disclaims beneficial ownership of the shares of Common Stock beneficially owned by BVF, BVF2, ILL10 and MSI, and the filing of this statement shall not be construed as an admission that any such person or entity is the beneficial owner of any such securities.

(b) Percent of class:

The following percentages are based on 29,804,273 shares of Common Stock, which is the total number of Shares outstanding as of November 12, 2015 as reported in the Issuer's Quarterly Report on Form 10-Q, filed with the Securities and Exchange Commission on November 12, 2015 and assumes the additional issuance of shares on the exercise of the Warrants.

As of the close of business on December 31, 2015 (i) BVF beneficially owned less than 1% of the outstanding shares of Common Stock, (ii) BVF2 beneficially owned less than 1% of the outstanding shares of Common Stock, (iii) ILL10 beneficially owned less than 1% of the outstanding shares of Common Stock, (iv) MSI beneficially owned less than 1% of the outstanding shares of Common Stock, and (v) each of Partners, BVF Inc. and Mr. Lampert may be deemed to beneficially own approximately 1.4% of the outstanding shares of Common Stock.

(c) Number of shares as to which such person has:

(i) Sole power to vote or to direct the vote

See Cover Pages Items 5-9.

(ii) Shared power to vote or to direct the vote

See Cover Pages Items 5-9.

(iii) Sole power to dispose or to direct the disposition of

See Cover Pages Items 5-9.

(iv) Shared power to dispose or to direct the disposition of

See Cover Pages Items 5-9.

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 [X].

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Not Applicable.

Item 7. Identification and Classification of the Subsidiary That 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.

See Exhibit 99.1 to the Schedule 13G.

Item 9. Notice of Dissolution of Group.

Not Applicable.

Item 10. Certifications.

By signing below each of the undersigned certifies that, to the best of its knowledge and belief, the securities referred to above 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.

SIGNATURE

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

Dated: February 16, 2016

BIOTECHNOLOGY VALUE FUND, L.P.

By: BVF Partners L.P., its general partner
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

INVESTMENT 10, L.L.C.

By: BVF Partners L.P., its investment advisor
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BIOTECHNOLOGY VALUE FUND II, L.P.

By: BVF Partners L.P., its general partner
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

MSI BVF SPV, LLC

By: BVF Partners L.P., its investment advisor
By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BVF PARTNERS L.P.

By: BVF Inc., its general partner

By: /s/ Mark N. Lampert
Mark N. Lampert
President

BVF INC.

By: /s/ Mark N. Lampert
Mark N. Lampert
President

/s/ Mark N. Lampert
MARK N. LAMPERT

