

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 THERETO FILED
PURSUANT TO RULE 13d-2(b)

(Amendment No.)¹

GTx, Inc.
(Name of Issuer)

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

40052B108
(CUSIP Number)

November 14, 2014
(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"/> x (b) <input type="checkbox"/> o	
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 5,146,271
	7	SOLE DISPOSITIVE POWER 0 shares
	8	SHARED DISPOSITIVE POWER 5,146,271
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 5,146,271	
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) 3.7%	
12	TYPE OF REPORTING PERSON PN	

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 2,666,747
	7	SOLE DISPOSITIVE POWER 0 shares
	8	SHARED DISPOSITIVE POWER 2,666,747
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 2,666,747	
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) 1.9%	
12	TYPE OF REPORTING PERSON PN	

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"/> x (b) <input type="checkbox"/> o	
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
		1,430,041
	7	SOLE DISPOSITIVE POWER
		0 shares
	8	SHARED DISPOSITIVE POWER
		1,430,041
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON	
	1,430,041	
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)	
	1.0%	
12	TYPE OF REPORTING PERSON	
	OO	

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"/> x (b) <input type="checkbox"/> o	
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
		1,868,052
	7	SOLE DISPOSITIVE POWER
		0 shares
	8	SHARED DISPOSITIVE POWER
		1,868,052
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON	
	1,868,052	
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)	
	1.3%	
12	TYPE OF REPORTING PERSON	
	OO	

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 11,111,111
	7	SOLE DISPOSITIVE POWER 0 shares
	8	SHARED DISPOSITIVE POWER 11,111,111
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 11,111,111	
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) 7.9%	
12	TYPE OF REPORTING PERSON PN, IA	

1	NAME OF REPORTING PERSON	
	BVF Inc.	
2	CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP (a) x (b) o	
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 11,111,111
	7	SOLE DISPOSITIVE POWER 0 shares
	8	SHARED DISPOSITIVE POWER 11,111,111
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 11,111,111	
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) 7.9%	
12	TYPE OF REPORTING PERSON CO	

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 11,111,111
	7	SOLE DISPOSITIVE POWER 0 shares
	8	SHARED DISPOSITIVE POWER 11,111,111
9	AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON 11,111,111	
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) 7.9%	
12	TYPE OF REPORTING PERSON IN	

Item 1(a). Name of Issuer:
GTx, Inc., a Delaware corporation (the “Issuer”).

Item 1(b). Address of Issuer's Principal Executive Offices:
175 Toyota Plaza
7th Floor
Memphis, Tennessee 38103

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
601 Lexington Avenue, 59th Floor
New York, NY 10022
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:
40052B108

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:

- /x/ 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:

As of the close of business on November 14, 2014, (i) BVF beneficially owned 5,146,271 shares of Common Stock, (ii) BVF2 beneficially owned 2,666,747 shares of Common Stock, (iii) ILL10 beneficially owned 1,430,041 shares of Common Stock, and (iv) MSI beneficially owned 1,868,052 shares of Common Stock.

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 11,111,111 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 11,111,111 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 11,111,111 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 140,325,643 shares of Common Stock determined to be outstanding immediately after the Issuer's issuance of shares of its common stock pursuant to a Securities Purchase Agreement dated as of November 9, 2014 between the Issuer and the Purchasers party thereto, filed as an Exhibit to the Issuer's Current Report on Form 8-K dated November 10, 2014.

As of the close of business on November 14, 2014, (i) BVF beneficially owned approximately 3.7% of the outstanding shares of Common Stock, (ii) BVF2 beneficially owned approximately 1.9% of the outstanding shares of Common Stock, (iii) ILL10 beneficially owned approximately 1% of the outstanding shares of Common Stock, (iv) MSI beneficially owned approximately 1.3% of the outstanding shares of Common Stock, and (v) each of Partners, BVF Inc. and Mr. Lampert may be deemed to beneficially own approximately 7.9% of the outstanding shares of Common Stock.

As of November 14, 2014, the Reporting Persons also beneficially owned warrants to purchase an aggregate of 11,111,111 shares of Common Stock (the "November Warrants"). The November Warrants will be exercisable at any time and from time to time from and after the earlier of (i) the Stockholder Approval Date (as defined below) or (ii) the trading day immediately prior to the occurrence of a "fundamental transaction" (as defined in the Form of Warrant which is attached as an exhibit to the Securities Purchase Agreement referenced above), but in no event later than June 1, 2015, and would continue to be exercisable for four years thereafter, at an exercise price of \$0.85 per share. The "Stockholder Approval Date" means the date the Issuer receives stockholder approval, at a special or annual meeting to be held no later than May 27, 2015, of an amendment to the Issuer's Certificate of Incorporation to increase the Issuer's authorized Common Stock to an amount necessary to effect the share settlement of all of the warrants issued by the Issuer on November 14, 2014. The warrant further provides that the Reporting Persons can only exercise the warrants to the extent (and only to the extent) that the receipt of shares of Common Stock upon exercise of the warrant would not cause the Reporting Persons to become, directly or indirectly, a "beneficial owner" (within the meaning of Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder) of more than 9.99% of the shares of Common Stock outstanding at such time.

(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.

Not Applicable.

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

Partners, BVF Inc. and Mr. Lampert share voting and dispositive power over the shares of Common Stock beneficially owned by BVF, BVF2, ILL10 and MSI.

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.

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: November 24, 2014

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 adviser
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 adviser
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

Joint Filing Agreement

The undersigned hereby agree that the Statement on Schedule 13G dated November 24, 2014 with respect to the shares of Common Stock of GTx, Inc., and any further amendments thereto executed by each and any of the undersigned shall be filed on behalf of each of the undersigned pursuant to and in accordance with the provisions of Rule 13d-1(k)(1) under the Securities Exchange Act of 1934, as amended.

Dated: November 24, 2014

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 adviser
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 adviser
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