

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-8**REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933****GTx, INC.**

(Exact name of Registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

62-1715807

(I.R.S. Employer Identification Number)

175 Toyota Plaza**7th Floor****Memphis, TN 38103****(901) 523-9700**

(Address, including zip code, of Registrant's principal executive offices)

GTx, Inc. 2013 Equity Incentive Plan**GTx, Inc. 2013 Non-Employee Director Equity Incentive Plan**

(Full titles of the plans)

Marc S. Hanover**Chief Executive Officer****GTx, Inc.****175 Toyota Plaza****7th Floor****Memphis, TN 38103****(901) 523-9700**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:**Chadwick L. Mills**

Cooley LLP

101 California Street, 5th Floor

San Francisco, CA 94111-5800

(415) 693-2000

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="radio"/>	Accelerated filer	<input checked="" type="radio"/>
Non-accelerated filer	<input type="radio"/>	Smaller reporting company	<input type="radio"/>

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered (1)	Proposed Maximum Offering Price Per Share (2)	Proposed Maximum Aggregate Offering Price (2)	Amount of Registration Fee
Common Stock, par value \$.001 per share	9,140,442 shares	\$0.78-\$1.33	\$ 8,837,519.76	\$ 889.94

(1) Pursuant to Rule 416 promulgated under the Securities Act of 1933, as amended (the "Securities Act"), this Registration Statement shall also cover any additional shares of the Registrant's common stock that become issuable under the plans set forth herein by reason of any stock dividend, stock split, recapitalization or other similar transaction effected without receipt of consideration that increases the number of outstanding shares of the Registrant's common stock.

(2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457(h) and Rule 457(c) promulgated under the Securities Act. The offering price per share and the aggregate offering price are based upon (a) the weighted average exercise price for the Registrant's common stock subject to outstanding options granted under the plans set forth herein and (b) the average of the high and low prices of the Registrant's common stock as reported on The NASDAQ Capital Market on December 17, 2015. The chart below details the calculations of the registration fee:

Securities	Number of Shares of Common Stock	Offering Price Per Share	Aggregate Offering Price/Registration Fee
Common Stock, \$.001 par value per share, issuable upon the exercise of outstanding options granted under the GTx, Inc. 2013 Equity Incentive Plan	3,022,500	\$ 1.33(2)(a)	\$ 4,019,925.00
Common Stock, \$.001 par value per share, reserved for future issuance under the GTx, Inc. 2013 Equity Incentive Plan	5,117,942	\$ 0.78(2)(b)	\$ 3,991,994.76
Common Stock, \$.001 par value per share, issuable upon the exercise of outstanding options granted under the GTx, Inc. 2013 Non-Employee Director Equity Incentive Plan	380,000	\$ 0.90(2)(a)	\$ 342,000.00
Common Stock, \$.001 par value per share, reserved for future issuance under	620,000	\$ 0.78(2)(b)	\$ 483,600.00

EXPLANATORY NOTE

This Registration Statement on Form S-8 is being filed for the purpose of registering an additional (i) 8,140,442 shares of the Registrant's Common Stock to be issued pursuant to the Registrant's 2013 Equity Incentive Plan (the "2013 EIP") and (ii) 1,000,000 shares of the Registrant's Common Stock to be issued pursuant to the Registrant's 2013 Non-Employee Director Equity Incentive Plan (the "2013 NEDEIP"). The Registrant previously registered up to 10,301,716 shares of the Registrant's Common Stock and up to 853,667 shares of the Registrant's Common Stock for issuance under the 2013 EIP and the 2013 NEDEIP, respectively, pursuant to the Registrant's Registration Statement on Form S-8 (File No. 333-188377), filed with the Securities and Exchange Commission on May 6, 2013.

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PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents have been filed by the Registrant with the Securities and Exchange Commission (the "Commission") and are incorporated herein by reference:

- the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2014, filed with the Commission on March 16, 2015 (the "2014 Form 10-K");
- the information specifically incorporated by reference into the 2014 Form 10-K from the Registrant's definitive proxy statement on Schedule 14A, filed with the Commission on March 26, 2015;
- the Registrant's Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2015, June 30, 2015 and September 30, 2015, filed with the Commission on May 11, 2015, August 10, 2015 and November 9, 2015, respectively;
- the Registrant's Current Reports on Form 8-K, filed with the Commission on February 19, 2015, March 4, 2015 (other than the information furnished under Item 2.02 thereof and the related exhibit), March 20, 2015, April 2, 2015, April 17, 2015, April 23, 2015, June 2, 2015, July 8, 2015, September 29, 2015, October 6, 2015, October 13, 2015 and November 23, 2015; and
- the description of the Registrant's common stock set forth in its registration statement on Form 8-A, filed with the Commission on January 13, 2004, including any further amendments thereto or reports filed for the purposes of updating this description.

All documents subsequently filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits furnished on such form that relate to such items, prior to the filing of a post-effective amendment to this Registration Statement which indicates that all of the shares of Common Stock offered have been sold or which deregisters all of such shares then remaining unsold, shall be deemed to be incorporated by reference in this Registration Statement and to be a part hereof from the date of the filing of such documents.

For purposes of this Registration Statement, any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

The Registrant's certificate of incorporation contains provisions permitted under Delaware law relating to the liability of directors. These provisions eliminate a director's personal liability for monetary damages resulting from a breach of fiduciary duty, except in circumstances involving wrongful acts, such as:

- any breach of the director's duty of loyalty to the Registrant or its stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of the law;

- any act related to unlawful stock repurchases, redemptions or other distribution or payments of dividends; or
- any transaction from which the director derived an improper personal benefit.

These provisions do not limit or eliminate the Registrant's rights or any stockholder's rights to seek non-monetary relief, such as an injunction or rescission, in the event of a breach of a director's fiduciary duty. These provisions will not alter a director's liability under federal securities laws.

As permitted by Section 145 of the Delaware General Corporation Law, the Registrant's bylaws require the Registrant to indemnify its directors and executive officers to the fullest extent not prohibited by the Delaware law. The Registrant may expand the extent of such indemnification by individual contracts with the Registrant's directors and executive officers. Further, the Registrant may decline to indemnify any director or executive officer in connection with any proceeding initiated by such person or any proceeding by such person against the Registrant or its directors, officers, employees or other agents, unless such indemnification is expressly required to be made by law or the proceeding was authorized by the Registrant's board of directors.

The Registrant has entered into indemnity agreements with each of its current directors and its executive officers to give such directors and officers additional contractual assurances regarding the scope of the indemnification set forth in the Registrant's certificate of incorporation and bylaws and to provide additional procedural protections. At present, there is no pending litigation or proceeding involving any of the Registrant's directors, officers or employees for which indemnification is sought, nor is the Registrant aware of any threatened litigation that may result in claims for indemnification.

The Registrant has the power to indemnify its other officers, employees and other agents, as permitted by Delaware law, but the Registrant is not required to do so.

The Registrant has a directors' and officers' insurance and Registrant reimbursement policy. The policy insures the Registrant's directors and officers against unindemnified losses arising from certain wrongful acts in their capacities as directors and officers and reimburses the Registrant for those losses for which the Registrant has lawfully indemnified the directors and officers. The policy contains various exclusions, none of which apply to any offerings pursuant to this registration statement.

Item 7. Exemption from Registration Claimed.

Not Applicable.

Item 8. Exhibits.

Exhibit Number	Exhibit Description	Incorporation By Reference			
		Form	SEC File No.	Exhibit	Filing Date
3.1	Restated Certificate of Incorporation of GTx, Inc.	S-3	333-127175	4.1	08/04/2005
3.2	Certificate of Amendment of Restated Certificate of Incorporation of GTx, Inc.	10-Q	000-50549	3.4	05/11/2015
3.3	Amended and Restated Bylaws of GTx, Inc.	8-K	000-50549	3.2	07/26/2007
4.1	Reference is made to Exhibits 3.1, 3.2 and 3.3				
4.2	Specimen of Common Stock Certificate	S-1	333-109700	4.2	12/22/2003
5.1+	Opinion of Cooley LLP	—	—	—	—
23.1+	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm	—	—	—	—
23.2+	Consent of Cooley LLP is contained in Exhibit 5.1 to this Registration Statement	—	—	—	—
24.1+	Power of Attorney (contained on the signature pages hereto)	—	—	—	—
99.1	GTx, Inc. 2013 Equity Incentive Plan	S-8	333-188377	99.1	05/06/2013
99.2	GTx, Inc. 2013 Non-Employee Director Equity Incentive Plan	S-8	333-188377	99.2	05/06/2013

+ Filed herewith.

Item 9. Undertakings.

1. The undersigned Registrant hereby undertakes:

(a) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective Registration Statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement;

Provided, however, that paragraphs (a)(i) and (a)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the Registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference herein.

(b) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

2. The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
3. Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Memphis, State of Tennessee, on this 23rd day of December, 2015.

GTx, INC.

By: /s/ MARC S. HANOVER
Marc S. Hanover
Chief Executive Officer

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POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Marc S. Hanover, Henry P. Doggrell and Jason T. Shackelford, and each or any one of them, his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission (the "SEC"), and generally to do all such things in their names and behalf in their capacities as officers and directors to enable the registrant to comply with the provisions of the Securities Act of 1933 and all requirements of the SEC, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ MARC S. HANOVER</u> Marc S. Hanover	Chief Executive Officer and Director (<i>Principal Executive Officer</i>)	December 23, 2015
<u>/s/ JASON T. SHACKELFORD</u> Jason T. Shackelford	Senior Director, Accounting and Corporate Controller, and Principal Financial and Accounting Officer (<i>Principal Financial and Accounting Officer</i>)	December 23, 2015
<u>/s/ ROBERT J. WILLS, PH.D.</u> Robert J. Wills, Ph.D.	Executive Chairman of the Board of Directors	December 23, 2015

<u>/s/ MICHAEL G. CARTER</u> Michael G. Carter, M.D.	Director	December 23, 2015
<u>/s/ J.R. HYDE, III</u> J.R. Hyde, III	Director	December 23, 2015
<u>/s/ J. KENNETH GLASS</u> J. Kenneth Glass	Director	December 23, 2015
<u>/s/ KENNETH S. ROBINSON, M.D., M.DIV</u> Kenneth S. Robinson, M.D., M.Div.	Director	December 23, 2015

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EXHIBIT INDEX

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5.1+	Opinion of Cooley LLP	—	—	—	—
23.1+	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm	—	—	—	—
23.2+	Consent of Cooley LLP is contained in Exhibit 5.1 to this Registration Statement	—	—	—	—
24.1+	Power of Attorney (contained on the signature pages hereto)	—	—	—	—
99.1	GTx, Inc. 2013 Equity Incentive Plan	S-8	333-188377	99.1	05/06/2013
99.2	GTx, Inc. 2013 Non-Employee Director Equity Incentive Plan	S-8	333-188377	99.2	05/06/2013

+ Filed herewith.

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December 23, 2015

GTx, Inc.
175 Toyota Plaza
7th Floor
Memphis, Tennessee 38103

Ladies and Gentlemen:

We have represented GTx, Inc. (the “**Company**”) in connection with the filing of a Registration Statement on Form S-8 (the “**Registration Statement**”) with the Securities and Exchange Commission covering the offering of up to (i) 8,140,442 shares of the Company’s Common Stock, par value \$0.001 per share (“**Common Stock**”), pursuant to the Company’s 2013 Equity Incentive Plan (the “**2013 EIP Shares**”) and (ii) 1,000,000 shares of Common Stock pursuant to the Company’s 2013 Non-Employee Director Equity Incentive Plan (the “**2013 NEDEIP Shares**”), and the Company has requested our opinion in connection with certain related matters.

In connection with this opinion, we have examined the Registration Statement and related Prospectuses, the Company’s Restated Certificate of Incorporation, as amended to date, and Bylaws, as currently in effect, the Company’s 2013 Equity Incentive Plan (the “**2013 EIP**”), the Company’s 2013 Non-Employee Director Equity Incentive Plan (the “**2013 NEDEIP**”), and such other documents, records, certificates, memoranda and other instruments as we deem necessary as a basis for this opinion. We have assumed the genuineness and authenticity of all documents submitted to us as originals, and the conformity to originals of all documents submitted to us as copies thereof.

Our opinion is expressed only with respect to the federal laws of the United States of America and the General Corporation Law of the State of Delaware. We express no opinion as to whether the laws of any particular jurisdiction other than those identified above are applicable to the subject matter hereof.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the 2013 EIP Shares and the 2013 NEDEIP Shares, when sold and issued in accordance with the 2013 EIP and the 2013 NEDEIP, respectively, and the Registration Statement and related Prospectuses, will be validly issued, fully paid and nonassessable (except as to shares issued pursuant to certain deferred payment arrangements, which will be fully paid and nonassessable when such deferred payments are made in full).

We consent to the filing of this opinion as an exhibit to the Registration Statement.

Sincerely,

COOLEY LLP

By: /s/ Chadwick L. Mills
Chadwick L. Mills

101 CALIFORNIA STREET, 5TH FLOOR, SAN FRANCISCO, CA 94111-5800 T: (415) 693-2000 F: (415) 693-2222 WWW.COOLEY.COM

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the GTx, Inc. 2013 Equity Incentive Plan and the GTx, Inc. 2013 Non-Employee Director Equity Incentive Plan of our reports dated March 16, 2015, with respect to the financial statements of GTx, Inc. and the effectiveness of internal control over financial reporting of GTx, Inc., included in its Annual Report (Form 10-K) for the year ended December 31, 2014, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Memphis, Tennessee
December 23, 2015
