

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
WASHINGTON, D.C. 20549

FORM S-3
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, and telephone number, including area code, of registrant's principal executive offices)

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:

Henry P. Doggrell
Vice President, Chief Legal Officer and Secretary
GTx, Inc.
175 Toyota Plaza
7th Floor
Memphis, TN 38103
(901) 523-9700

Chadwick Mills
Cooley LLP
101 California Street
5th Floor
San Francisco, CA 94111-5800
(650) 843-5654

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering:

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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

Large accelerated filer	<input type="radio"/>		Accelerated filer	<input type="radio"/>
Non-accelerated filer	<input type="radio"/> (Do not check if a smaller reporting company)		Smaller reporting company	<input checked="" type="checkbox"/>
			Emerging growth company	<input type="radio"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of Securities Act.

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Unit(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common Stock, par value \$0.001 per share	8,773,308	\$ 7.8455	\$ 68,830,988	\$ 8,570

(1) Includes 3,289,988 shares of common stock that may be issued upon the exercise of outstanding warrants. Pursuant to Rule 416 under the Securities Act of 1933, as amended, the shares of common stock being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares of common stock being registered hereunder as a result of stock splits, stock dividends or similar transactions.

(2) Estimated solely for the purpose of calculating the amount of the registration fee pursuant to Rule 457 promulgated under the Securities Act. The offering price per share and the aggregate offering price are based upon the average of the high and low prices of the Registrant's common stock as reported on The NASDAQ Capital Market on October 19, 2017.

The Registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment that specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The selling stockholders may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting offers to buy these securities in any state where such offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED OCTOBER 20, 2017

PROSPECTUS

8,773,308 Shares



Common Stock

This prospectus relates to the disposition from time to time of up to 8,773,308 shares of our common stock, which includes 3,289,988 shares of our common stock issuable upon the exercise of outstanding warrants, which are held by the selling stockholders named in this prospectus. We are not selling any common stock under this prospectus and will not receive any of the proceeds from the sale of shares by the selling stockholders. We will, however, receive the net proceeds of any warrants exercised for cash.

The selling stockholders identified in this prospectus, or their permitted transferees or other successors-in-interest that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part, may offer the shares from time to time through public or private transactions at fixed prices, at prevailing market prices, at varying prices determined at the time of sale, or at privately negotiated prices. We provide more information about how the selling stockholders may sell their shares of common stock in the section entitled "Plan of Distribution" beginning on page 7 of this prospectus. We have agreed to pay certain expenses incurred in connection with the registration of these shares, however, we will not be paying any underwriting discounts or commissions in connection with any offering of common stock under this prospectus.

Our common stock is listed on The NASDAQ Capital Market under the symbol "GTXI." On October 19, 2017, the last reported sale price of our common stock on The NASDAQ Capital Market was \$7.84.

Investing in our common stock involves a high degree of risk. You should review carefully the risks and uncertainties incorporated by reference herein under the heading "Risk Factors" on page 2 of this prospectus, and under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2017.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission, or SEC, using the "shelf" registration process. Under this process, the selling stockholders may from time to time, in one or more offerings, sell the common stock described in this prospectus.

You should rely only on the information contained in or incorporated by reference into this prospectus (as supplemented and amended). We have not authorized anyone to provide you with different information. This document may only be used where it is legal to sell these securities. The information contained in this prospectus (and in any supplement or amendment to this prospectus) is accurate only as of the date on the front of the document, and any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of our common stock. Our business, financial condition, results of operations and prospects may have changed since those dates.

We urge you to read carefully this prospectus (as supplemented and amended), together with the information incorporated herein by reference as described under the heading “Incorporation by Reference” before deciding whether to invest in any of the common stock being offered.

This prospectus incorporates by reference market data, industry statistics and other data that have been obtained from, or compiled from, information made available by third parties. We have not independently verified their data. This prospectus and the information incorporated herein by reference includes trademarks, service marks and trade names owned by us or other companies. All trademarks, service marks and trade names included or incorporated by reference into this prospectus are the property of their respective owners.

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PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus or incorporated by reference in this prospectus, and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus (as supplemented and amended), including the financial data and related notes, risk factors and other information incorporated by reference in this prospectus, before making an investment decision. Unless otherwise mentioned or unless the context requires otherwise, all references in this prospectus to “GTx,” “the company,” “we,” “us,” “our” or similar references mean GTx, Inc.

GTx, Inc.

We are a biopharmaceutical company dedicated to the discovery, development and commercialization of small molecules for the treatment of muscle-related diseases and other serious medical conditions. Our current strategy is focused on the further development of selective androgen receptor modulators, or SARMs, a class of drugs that we believe has the potential to treat serious medical conditions where unmet medical needs in muscle-related diseases may benefit from increasing muscle mass, such as stress urinary incontinence and Duchenne muscular dystrophy. Our lead product candidate is enobosarm (GTx-024). Enobosarm is the generic name given to the compound by the USAN Council and the World Health Organization and is the first compound to receive the SARM stem in its name, recognizing enobosarm as the first in this new class of compounds.

Additionally, in 2015, we entered into an exclusive worldwide license agreement with the University of Tennessee Research Foundation to develop its proprietary selective androgen receptor degrader, or SARD, technology which we believe has the potential to provide compounds that can degrade multiple forms of androgen receptor by inhibiting tumor growth in patients with progressive castration-resistant prostate cancer, including those patients who do not respond to or are resistant to current therapies.

We were originally incorporated under the name Genotherapeutics, Inc. in Tennessee in September 1997. We changed our name to GTx, Inc. in 2001, and we reincorporated in Delaware in 2003. Our principal executive office is located at 175 Toyota Plaza, 7th Floor, Memphis, TN 38103, and our telephone number is (901) 523-9700. Our website address is www.gtxinc.com. Information found on, or accessible through, our website is not a part of, and is not incorporated into, this prospectus, and you should not consider it part of this prospectus.

The Offering

The selling stockholders named in this prospectus may offer and sell up to 8,773,308 shares of our common stock, which includes 3,289,988 shares of our common stock issuable upon the exercise of outstanding warrants. The shares issuable upon exercise of the warrants will become eligible for sale by the selling stockholders under this prospectus only as the warrants are exercised. Our common stock is currently listed on The NASDAQ Capital Market under the symbol “GTXI.” Shares of common stock that may be offered under this prospectus, when issued and paid for in the case of shares issuable upon exercise of the outstanding warrants, will be fully paid and non-assessable. We will not receive any of the proceeds of sales by the selling stockholders of any of the common stock covered by this prospectus. Throughout this prospectus, when we refer to the shares of our common stock being registered on behalf of the selling stockholders, we are referring to the shares and the shares underlying the warrants issued to the selling stockholders pursuant to the securities purchase agreement we entered into with the selling stockholders on September 25, 2017, and when we refer to the selling stockholders in this prospectus, we are referring to the purchasers under the securities purchase agreement and, as applicable, their permitted transferees or other successors-in-interest that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part.

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RISK FACTORS

An investment in our common stock involves a high degree of risk. Before deciding whether to invest in our common stock, you should consider carefully the risks and uncertainties discussed under the heading “Risk Factors” contained in our quarterly report on Form 10-Q for the quarter ended June 30, 2017 filed with the SEC on August 14, 2017 and incorporated by reference in this prospectus, as the same may be amended, supplemented or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations. Please also read carefully the section below entitled “Special Note Regarding Forward-Looking Statements.”

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. These statements are based on our management's beliefs and assumptions and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the sections entitled "Business," "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" incorporated by reference from our most recent annual report on Form 10-K and in our most recent quarterly report on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC. All statements, other than statements of historical facts, are forward-looking statements for purposes of these provisions, including, without limitation, any statements relating to:

- the implementation of our business strategies, including our ability to preserve or realize any significant value from our SARM and SARD programs;
- the therapeutic and commercial potential of, and our ability to advance the development of, SARMs and our SARD program;
- the timing, scope and anticipated initiation, enrollment and completion of our ongoing clinical trials, and any other future clinical trials that we may conduct;
- our ability to establish and maintain potential new collaborative, partnering or other strategic arrangements for the development and commercialization of our product candidates;
- the anticipated progress of our preclinical and clinical programs, including whether our ongoing clinical trials will achieve clinically relevant results;
- the timing of regulatory discussions and submissions, and the anticipated timing, scope and outcome of related regulatory actions or guidance;
- our ability to obtain and maintain regulatory approvals of our product candidates and any related restrictions, limitations, and/or warnings in the label of an approved product candidate;
- our ability to market, commercialize and achieve market acceptance for our product candidates;
- our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others;
- our estimates regarding the sufficiency of our cash resources and our expenses, capital requirements and need for additional financing, and our ability to obtain additional financing; and
- our projected operating and financial performance.

In some cases, you can identify forward-looking statements by terms such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "project," "should," "will," "would" and similar expressions intended to identify forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance, time frames or achievements to be materially different from the information expressed or implied by these forward-looking

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statements. While we believe that we have a reasonable basis for each forward-looking statement, we caution you that these statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain. We discuss many of these risks, uncertainties and other factors in greater detail under the heading "Risk Factors" contained in our quarterly report on Form 10-Q for the quarter ended June 30, 2017 filed with the SEC on August 14, 2017 and incorporated by reference in this prospectus, as the same may be amended, supplemented or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus. Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements represent our estimates and assumptions only as of the date such forward-looking statements are made. You should carefully read this prospectus, together with the information incorporated herein by reference as described under the heading "Incorporation by Reference," completely and with the understanding that our actual future results may be materially different from what we expect. We can give no assurances that any of the events anticipated by the forward-looking statements will occur or, if any of them do, what impact they will have on our business, results of operations and financial condition. We hereby qualify all of our forward-looking statements by these cautionary statements.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

USE OF PROCEEDS

The selling stockholders will receive all of the net proceeds from sales of the common stock sold pursuant to this prospectus. However, in the case of warrants issued to the selling stockholders pursuant to the securities purchase agreement on September 29, 2017, upon any exercise of these warrants for cash, the selling stockholders would pay us an exercise price of \$9.02 per share of common stock, subject to any adjustment pursuant to the terms of the warrants. We expect to use any such warrant exercise proceeds primarily for working capital and general corporate purposes. These warrants are also exercisable on a cashless basis by net exercise. If any of these warrants are exercised on a cashless basis, we would not receive any cash payment from the applicable selling stockholder upon any such cashless exercise of a warrant.

SELLING STOCKHOLDERS

On September 25, 2017, we entered into a securities purchase agreement with the selling stockholders pursuant to which we issued and sold in a private placement an aggregate of 5,483,320 immediately separable units, comprised of an aggregate of 5,483,320 shares of our common stock and warrants to purchase up to 3,289,988 additional shares of our common stock (which warrants we refer to in this prospectus as the 2017 Warrants), for an aggregate

purchase price of approximately \$48.5 million. Pursuant to the securities purchase agreement, we agreed to file the registration statement of which this prospectus is a part to cover the resale of the shares of our common stock and the shares underlying the 2017 Warrants issued to the selling stockholders pursuant to the securities purchase agreement, and to keep such registration statement effective until the earlier to occur of September 29, 2019 or the date on which all of the shares of our common stock registered for resale under the registration statement have been sold or can be sold publicly without restriction or limitation under Rule 144 under the Securities Act. The 2017 Warrants, which have a five year term expiring on September 29, 2022, have a per share exercise price of \$9.02. The exercise price and number of shares of common stock issuable upon exercise of the 2017 Warrants may be adjusted in certain circumstances, including stock splits, stock dividends, reclassifications and the like. The shares issuable upon exercise of the 2017 Warrants will become eligible for sale by the selling stockholders under this prospectus only as the 2017 Warrants are exercised. We cannot predict when or whether any of the selling stockholders will exercise their 2017 Warrants.

We are registering the resale of the above-referenced shares to permit each of the selling stockholders identified below, or their permitted transferees or other successors-in-interest that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part, to resell or otherwise dispose of the shares in the manner contemplated under “Plan of Distribution” in this prospectus (as may be supplemented and amended). This prospectus covers the sale or other disposition by the selling stockholders of up to the total number of shares of common stock issued to the selling stockholders pursuant to the securities purchase agreement, plus the total number of shares of common stock issuable upon exercise of the

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2017 Warrants issued to the selling stockholders. Throughout this prospectus, when we refer to the shares of our common stock being registered on behalf of the selling stockholders, we are referring to the shares of our common stock and the shares underlying the 2017 Warrants issued to the selling stockholders pursuant to the securities purchase agreement, and when we refer to the selling stockholders in this prospectus, we are referring to the purchasers under the securities purchase agreement and, as applicable, their permitted transferees or other successors-in-interest that may be identified in a supplement to this prospectus or, if required, a post-effective amendment to the registration statement of which this prospectus is a part.

The selling stockholders may sell some, all or none of their shares. We do not know how long the selling stockholders will hold the shares before selling them, and we currently have no agreements, arrangements or understandings with the selling stockholders regarding the sale or other disposition of any of the shares. The shares of our common stock covered hereby may be offered from time to time by the selling stockholders.

The following table sets forth the name of each selling stockholder, the number and percentage of our common stock beneficially owned by the selling stockholders as of September 30, 2017, the number of shares of our common stock that may be offered under this prospectus, and the number and percentage of our common stock beneficially owned by the selling stockholders assuming all of the shares of our common stock registered hereunder are sold. Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to our common stock. Generally, a person “beneficially owns” shares of our common stock if the person has or shares with others the right to vote those shares or to dispose of them, or if the person has the right to acquire voting or disposition rights within 60 days. The number of shares of our common stock in the column “Number of Shares Offered” represents all of the shares of our common stock that a selling stockholder may offer and sell from time to time under this prospectus.

The information in the table below and the footnotes thereto regarding shares of common stock to be beneficially owned after the offering assumes that all of the selling stockholders have exercised the 2017 Warrants in full pursuant to cash exercises and further assumes the sale of all shares being offered by the selling stockholders under this prospectus.

All information contained in the table below and the footnotes thereto is based upon information provided to us by the selling stockholders. The information in the table below and the footnotes thereto regarding shares of common stock to be beneficially owned after the offering assumes that all of the selling stockholders have exercised the 2017 Warrants in full pursuant to cash exercises and further assumes the sale of all shares being offered by the selling stockholders under this prospectus. The percentage of shares owned prior to and after the offering is based on 21,541,909 shares of common stock outstanding as of September 30, 2017 and, with respect to the percentage of shares owned after the offering, on the assumption that all of the selling stockholders have exercised the 2017 Warrants in full pursuant to cash exercises and therefore that all shares of common stock issuable upon exercise of the 2017 Warrants were outstanding as of that date. Unless otherwise indicated in the footnotes to this table, we believe that each of the selling stockholders named in this table has sole voting and investment power with respect to the shares of common stock indicated as beneficially owned. Except as otherwise indicated below, based on the information provided to us by the selling stockholders, none of the selling stockholders is a broker-dealer or an affiliate of a broker-dealer.

Name and Address	Prior to Offering		Number of Shares Offered ⁽²⁾	After Offering	
	Number of Shares Beneficially Owned ⁽¹⁾	Percentage of Shares Beneficially Owned ⁽¹⁾		Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned
J. R. Hyde, III 17 West Pontotoc Ave. Suite 100 Memphis, TN 38103	9,223,794 ⁽³⁾	38.5%	1,808,931	8,167,695	29.9%
CDK Associates, L.L.C. 731 Alexander Road, Bldg. 2, Suite 500 Princeton, NJ 08540	1,080,914 ⁽⁴⁾	4.99%	1,537,590	—	—
Amzak Health Investors, LLC 980 North Federal Highway, Suite 315 Boca Raton, FL 33432	1,356,697 ⁽⁵⁾	6.2%	1,356,697	—	—
Aisling Capital IV LP 888 7th Avenue, 12th Floor New York, NY 10106	1,356,697 ⁽⁶⁾	6.2%	1,356,697	—	—

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The Pyramid Peak Foundation 1350 Concourse Avenue, Suite 383 Memphis, TN 38104	7,183,900 ⁽⁷⁾	29.5%	904,465	6,279,435	23.0%
Boxer Capital, LLC 11682 El Camino Real, Suite 320 San Diego, CA 92130	904,465 ⁽⁸⁾	4.1%	904,465	—	—
Abingworth BioEquities Master Fund Ltd 38 Jermyn Street London SW1Y 6DN, United Kingdom	542,678 ⁽⁹⁾	2.5%	542,678	—	—
Jack W. Schuler 100 N. Field Drive, Suite 360 Lake Forest, IL 60045	1,709,862 ⁽¹⁰⁾	7.9%	361,785	1,348,077	5.4%

- (1) Under the terms of the 2017 Warrants, the number of shares of our common stock that may be acquired by a selling stockholder upon any exercise of a 2017 Warrant is generally limited to the extent necessary to ensure that, following such exercise, such selling stockholder would not, together with its affiliates and any other persons or entities whose beneficial ownership of our common stock would be aggregated with such selling stockholder for purposes of Section 13(d) of the Exchange Act, beneficially own in excess of a specified percentage of the total number of shares of our common stock then issued and outstanding and/or the then combined voting power of all of our voting securities (the “Blockers”). Certain of the Blockers are waivable by the selling stockholders’ on at least 61 days’ prior notice to us up to a specified maximum percentage. If the operation of the Blockers currently limits the beneficial ownership of a selling stockholder, such limitation is noted in the footnotes that follow. In addition, as noted in footnote (2), the number of shares shown under the column titled “Number of Shares Offered” is shown without regard to the foregoing limitations on exercise.
- (2) The number of shares offered hereby, for each selling stockholder, consists solely of the shares issued to such selling stockholder pursuant to the securities purchase agreement and the shares issuable upon exercise of the 2017 Warrants issued to such selling stockholder. The shares issuable upon exercise of the 2017 Warrants will become eligible for sale by the selling stockholders under this prospectus only as the 2017 Warrants are exercised. In addition, the number of shares offered hereby shown under the column titled “Number of Shares Offered” includes the maximum number of shares issuable upon the exercise of the 2017 Warrants without regard to the limitations on exercise described in footnote (1) above.
- (3) Mr. Hyde has the sole power to vote or to direct the vote and the sole power to dispose or to direct the disposition of 6,767,668 shares, which include 1,130,582 shares issued to Mr. Hyde pursuant to the securities purchase agreement, 14,535 shares held by Pittco Associates III, L.P. and 391,571 shares held by Pittco Investments, L.P., entities controlled by Mr. Hyde, 2,454,483 shares issuable upon the exercise of a warrant issued to Mr. Hyde in November 2014, or the 2014 Warrant, 678,349 shares issuable upon exercise of a 2017 Warrant, and 36,456 shares issuable to Mr. Hyde pursuant to our Directors’ Deferred Compensation Plan. With respect to the 2014 Warrant and the 2017 Warrant held by Mr. Hyde, or the Hyde Warrants, the Hyde Warrants cover the exercise of up to an aggregate of 3,132,832 shares; however, the number of shares of our common stock that may be acquired by Mr. Hyde upon the exercise of each of the Hyde Warrants is generally limited to the extent necessary to ensure that, following such exercise, Mr. Hyde would not, together with his affiliates and any other persons or entities whose beneficial ownership of our common stock would be aggregated with Mr. Hyde for purposes of Section 13(d) of the Exchange Act, beneficially own in excess of 38.5% of (a) the total number of shares of our common stock then issued and outstanding or (b) the then combined voting power of all of our voting securities. As a result of these restrictions, the Hyde Warrants are exercisable for up to an aggregate of 2,380,000 shares of our common stock within 60 days of September 30, 2017, and the number and percentage of shares beneficially owned by Mr. Hyde in the table above reflects this restriction. See footnote (1). The number of shares exercisable prior to the offering will change depending upon changes in the outstanding shares. As set forth in footnote (1), the number of shares shown under “Number of Shares Offered” in the table above includes all shares issuable upon the exercise of the 2017 Warrant held by Mr. Hyde without regard to the foregoing limitation on exercise; likewise, the number of shares shown under “Number of Shares Beneficially Owned” after the offering assumes the 2017 Warrant held by Mr. Hyde has been exercised in full and all such shares have been sold pursuant to this prospectus. Mr. Hyde also has shared voting and dispositive power over 21,646 shares held by Mr. Hyde’s spouse, 184,480 shares held by trusts for the benefit of Mr. Hyde’s children (the “Hyde Family Trusts”) and 2,250,000 shares held in grantor retained annuity trusts on behalf of Mr. Hyde (the “Hyde GRATs”). As trustee of the Hyde Family Trusts and certain of the Hyde GRATs, John H. Pontius shares voting and dispositive power over all of the shares held by the Hyde Family Trusts. Lorie Jernigan, as trustee of certain of the Hyde GRATs, shares voting and dispositive power over 500,000 shares held in the Hyde GRATs, Wilson Sights, as trustee of certain of the Hyde GRATs, shares voting and dispositive power over 250,000 shares held in the Hyde GRATs, John H. Pontius, as trustee of certain of the Hyde GRATs, shares voting and dispositive power over 250,000 shares held in the Hyde GRATs, Lorie Rivers, as trustee of certain of the Hyde GRATs, shares voting and dispositive power over 750,000 shares held in the Hyde GRATs, and Andrew Seamons, as trustee of certain of the Hyde GRATs, shares voting and dispositive power over 500,000 shares

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held in the Hyde GRATs. The business address for Ms. Jernigan, Ms. Rivers, Mr. Sights and Mr. Seamons is 17 West Pontotoc Ave., Suite 100 Memphis, TN 38103.

- (4) Includes (i) 960,994 shares of common stock held by the selling stockholder and (ii) 119,920 shares of common stock issuable upon exercise of a 2017 Warrant held by the selling stockholder that is exercisable within 60 days of September 30, 2017. With respect to the 2017 Warrant held by the selling stockholder, such 2017 Warrant covers the exercise of up to an aggregate of 576,596 shares; however, the number of shares of our common stock that may be acquired by the selling stockholder upon the exercise of such 2017 Warrant is generally limited to the extent necessary to ensure that, following such exercise, the selling stockholder would not, together with its affiliates and any other persons or entities whose beneficial ownership of our common stock would be aggregated with the selling stockholder for purposes of Section 13(d) of the Exchange Act, beneficially own in excess of 4.99% of the total number of shares of our common stock then issued and outstanding; provided, that such Blocker is waivable by the selling stockholder on at least 61 days’ prior notice to us up to a 9.99% maximum. As a result of these restrictions, such 2017 Warrant is exercisable for up to an aggregate of 119,920 shares of our common stock within 60 days of September 30, 2017, and the number and percentage of shares beneficially owned by the selling stockholder in the table above reflects this restriction. See footnote (1). The number of shares exercisable prior to the offering will change depending upon changes in the outstanding shares and any waiver of the 4.99% Blocker. As set forth in footnote (1), the number of shares shown under “Number of Shares Offered” in the table above includes all shares issuable upon the exercise of the 2017 Warrant held by the selling stockholder without regard to the foregoing limitation on exercise; likewise, the number of shares shown under “Number of Shares Beneficially Owned” after the offering assumes the 2017 Warrant held by the selling stockholder has been exercised in full and all such shares have been sold pursuant to this prospectus. These securities

are held by CDK Associates, L.L.C. and may be deemed to be beneficially owned by (a) Caxton Corporation, the manager of CDK Associates, LLC and (b) Bruce Kovner, the chairman and sole shareholder of Caxton Corporation. The selling stockholder has represented to us that it is an affiliate of a broker-dealer. The selling stockholder has also represented to us that it acquired the shares being registered hereunder in the ordinary course of its business, and at the time of its purchase of the shares and its 2017 Warrant, the selling stockholder did not have any agreements or understandings, directly or indirectly, with any person to distribute such securities.

- (5) Includes (i) 847,936 shares of our common stock held by the selling stockholder and (ii) 508,761 shares of our common stock issuable upon exercise of a 2017 Warrant held by the selling stockholder. Michael D. Kazma, Joyce Erony and Anders Hove are managers of the selling stockholder and hold shared voting and dispositive power over the securities owned by the selling stockholder.
- (6) Includes (i) 847,936 shares of our common stock held by the selling stockholder and (ii) 508,761 shares of common stock issuable upon exercise of a 2017 Warrant held by the selling stockholder. The shares of common stock (including those issuable upon exercise of a 2017 Warrant) are owned directly by Aisling Capital IV, L.P. (“Aisling”) and held indirectly by Aisling Capital Partners IV, LP (“Aisling GP”), as general partner of Aisling, Aisling Capital Partners IV LLC (“Aisling Partners”), as general partner of Aisling GP, and each of the individual managing members of Aisling Partners. The individual managing members (collectively, the “Managers”) of Aisling Partners are Dr. Andrew Schiff and Steve Elms. Aisling GP, Aisling Partners and the Managers share voting and dispositive power over the shares directly held by Aisling.
- (7) Includes (i) 4,390,243 shares of our common stock held by The Pyramid Peak Foundation (“Foundation”), (ii) 2,454,483 shares issuable upon exercise of a warrant issued to Foundation in November 2014 and (iii) 339,174 shares issuable upon exercise of a 2017 Warrant held by the Foundation. James R. Boyd, Lee B. Harper, O. Mason Hawkins and Andrew R. McCarroll are each a director of the Foundation. Each of such individuals may be deemed to share beneficial ownership of the shares beneficially owned by the Foundation.
- (8) Includes (i) 565,291 shares of our common stock held by the selling stockholder and (ii) 339,174 shares of common stock issuable upon exercise of a 2017 Warrant held by the selling stockholder. The voting and investment power over such shares is controlled by a two thirds vote of the investment committee of Boxer Capital, LLC which comprises Aaron Davis, Christopher Fuglesang and Shehan Dissanayake.
- (9) Includes (i) 339,174 shares of our common stock held by the selling stockholder and (ii) 203,504 shares issuable upon exercise or a 2017 Warrant held by the selling stockholder. An investment committee of Abingworth LLP, comprised of Stephen W. Bunting, Timothy Haines, Kurt von Emster, and Genghis Lloyd-Harris, approves investment and voting decisions of Abingworth BioEquities Master Fund Ltd (“ABE”), the selling stockholder, by a majority vote, and no individual member has the sole control or voting power over the securities held by ABE. From time to time, the investment committee may delegate investment and voting authority over certain securities held by ABE to employees of Abingworth LLP subject to the supervision and oversight of the investment committee, including any limits on such authority imposed by the investment committee in its discretion and the right of the investment committee to revoke such authority at any time.
- (10) Includes (i) 1,574,193 shares of our common stock held or otherwise beneficially owned by the selling stockholder and (ii) 135,669 shares of common stock issuable upon the exercise of a 2017 Warrant held by the selling stockholder. Jack W. Schuler has sole voting and dispositive power over 947,498 of such shares and shared voting and dispositive power over 626,695 of such shares, which shares are owned by the Schuler Family Foundation, of which Mr. Schuler serves as a

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director along with his wife and daughter. The indicated ownership does not include 27,935 shares of GTx common stock owned by three irrevocable trusts (the “Trusts”) established for the benefit of Mr. Schuler’s adult children.

Relationships with the Selling Stockholders

Positions or Offices with GTx

J.R. Hyde, III has served as a director of GTx since November 2000 and is currently our largest stockholder. From November 2000 to March 2015, Mr. Hyde served as non-executive Chairman of our Board of Directors. In connection with Robert J. Wills’ assumption of duties as our Executive Chairman in March 2015, Mr. Hyde was appointed as our Lead Director and has served in such capacity since March 2015.

Other Relationships

In November 2014, we sold an aggregate of 64,311,112 immediately separable units in a private placement, or the 2014 Private Placement, which units consisted of an aggregate of 64,311,112 shares of our common stock and warrants to purchase up to 64,311,112 additional shares of our common stock for an aggregate purchase price of approximately \$43.4 million, or \$0.675 per unit. In the 2014 Private Placement, each of Mr. Hyde and The Pyramid Peak Foundation purchased 24,545,455 units, consisting of 24,545,455 shares of our common stock and a warrant to purchase 24,545,455 shares of our common stock for total consideration payable to us by each of Mr. Hyde and The Pyramid Peak Foundation of approximately \$16.6 million. Pursuant to the securities purchase agreement under which we sold the above-referenced units to the investors, we filed two registration statements with the SEC, one in 2014 and one in 2015, to register the resale of the above-referenced shares and the shares underlying the above-referenced warrants, and agreed to keep such registration statements effective for up to two years following the closing of the 2014 Private Placement. We agreed to bear all expenses of such registration of the resale of these shares, including the legal expenses of the investors of up to \$5,000 per investor per registration statement.

In October 2016, we sold an aggregate of 17,283,947 shares of our common stock in a registered direct offering, or the Registered Direct, at a purchase price of \$0.81 per share. The investors in the Registered Direct included Mr. Hyde, The Pyramid Peak Foundation and Jack W. Schuler. In the Registered Direct, each of Mr. Hyde and The Pyramid Peak Foundation purchased 7,716,049 shares of our common stock for total consideration payable to us by each of Mr. Hyde and The Pyramid Peak Foundation of approximately \$6.3 million, and Mr. Schuler purchased 1,234,567 shares of our common stock for total consideration payable to us by Mr. Schuler of approximately \$1.0 million.

The share and per share information provided above under “Other Relationships” has not been retroactively adjusted to give effect to the one-for-ten reverse stock split of our outstanding common stock that we effected on December 5, 2016.

Except with respect to the foregoing and the transactions contemplated by the securities purchase agreement as described above, none of the selling stockholders (or their control persons) has, or within the past three years has had, any position, office or other material relationship with us or any of our affiliates.

PLAN OF DISTRIBUTION

We are registering the shares of common stock issued to the selling stockholders and issuable upon exercise of the 2017 Warrants issued to the selling stockholders to permit the resale of these shares of common stock by the selling stockholders from time to time from after the date of this prospectus. We will not receive any of the proceeds from the sale by the selling stockholders of the shares of common stock. We will bear all fees and expenses incident to our obligation to register the shares of common stock.

Each selling stockholder may, from time to time, sell any or all of their shares of common stock covered hereby on The NASDAQ Capital Market or any other stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or privately negotiated prices. A selling stockholder may use any one or more of the following methods when selling shares:

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- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales, to the extent permitted by law;
- in transactions through broker-dealers that agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell the shares of common stock under Rule 144 under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440-1.

In connection with the sale of the shares of common stock or interests therein, the selling stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the shares of common stock in the course of hedging the positions they assume. The selling stockholders may also sell the shares of common stock short and deliver these securities to close out their short positions or to return borrowed shares in connection with such short sales, or loan or pledge the shares of common stock to broker-dealers that in turn may sell these securities. The selling stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of shares of common stock offered by this prospectus, which shares such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The selling stockholders and any broker-dealers or agents that are involved in selling the shares of common stock may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such selling stockholders, broker-dealers or agents and any profit on the resale of the shares purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Selling stockholders who are “underwriters” within the meaning of Section 2(a)(11) of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act and may be subject to certain statutory liabilities of, including but not limited to, Sections 11, 12 and 17 of the Securities Act and Rule 10b-5 under the Exchange Act. In no event shall any broker-dealer receive fees, commissions and markups which, in the aggregate, would exceed eight percent (8%).

We are required to pay certain fees and expenses incurred by us incident to the registration of the shares. We have agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act, and the selling stockholders may be entitled to contribution. We may be indemnified by the selling stockholders against certain losses, claims, damages and liabilities, including liabilities

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under the Securities Act that may arise from any written information furnished to us by the selling stockholders specifically for use in this prospectus, or we may be entitled to contribution.

The selling stockholders will be subject to the prospectus delivery requirements of the Securities Act including Rule 172 thereunder unless an exemption therefrom is available.

We agreed to cause the registration statement of which this prospectus is a part to remain effective until the earlier to occur of September 29, 2019 or the date on which all of the shares registered for resale under the registration statement have been sold or can be sold publicly without restriction or limitation under Rule 144 under the Securities Act. The shares of common stock will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the shares of common stock covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the shares of common stock may not simultaneously engage in market making activities with respect to the shares of common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the selling stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of shares of common stock by the selling stockholders or any other person. We will make copies of this prospectus available to the selling stockholders and have informed them of the need to deliver a copy of this prospectus at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

There can be no assurance that any selling stockholder will sell any or all of the shares of common stock we registered on behalf of the selling stockholders pursuant to the registration statement of which this prospectus forms a part.

Once sold under the registration statement of which this prospectus forms a part, the shares of common stock will be freely tradable in the hands of persons other than our affiliates.

VALIDITY OF COMMON STOCK

The validity of the common stock being offered hereby has been passed upon for us by Cooley LLP, San Francisco, California.

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EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2016, and the effectiveness of our internal control over financial reporting as of December 31, 2016, as set forth in their reports, which are incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's reports, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We are a reporting company and file annual, quarterly and current reports, proxy statements and other information with the SEC. We have filed with the SEC a registration statement on Form S-3 under the Securities Act with respect to the resale of the common stock the selling stockholders are offering under this prospectus. This prospectus does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. For further information with respect to us and the common stock offered by the selling stockholders under this prospectus, we refer you to the registration statement and the exhibits filed as a part of the registration statement. You may read and copy the registration statement, as well as our reports, proxy statements and other information, at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the public reference room. The SEC also maintains an Internet site that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC, including GTx. The SEC's Internet site can be found at www.sec.gov. We maintain a website at www.gtxinc.com. Information found on, or accessible through, our website is not a part of, and is not incorporated into, this prospectus, and you should not consider it part of this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to another document that we have filed separately with the SEC. You should read the information incorporated by reference because it is an important part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC (Commission File No. 000-50549):

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the SEC on March 24, 2017;
- the information specifically incorporated by reference into our Annual Report on Form 10-K for the fiscal year ended December 31, 2016 from our definitive proxy statement on Schedule 14A for our 2017 Annual Meeting of Stockholders, filed with the SEC on March 31, 2017;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2017 and June 30, 2017, filed with the SEC on May 15, 2017 and August 14, 2017, respectively;
- our Current Reports on Form 8-K, filed with the SEC on January 9, 2017, May 3, 2017, May 11, 2017, June 12, 2017, September 13, 2017 and September 29, 2017; and
- the description of our common stock set forth in our registration statement on Form 8-A, filed with the SEC on January 13, 2004, including any further amendments thereto or reports filed for the purposes of updating this description.

We also incorporate by reference any future filings (other than current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, until we file a post-effective amendment that indicates the

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termination of the offering of the common stock made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

We will furnish without charge to each person, including any beneficial owner, to whom a prospectus is delivered, upon written or oral request, a copy of any or all of the documents incorporated by reference into this prospectus but not delivered with the prospectus, including exhibits that are specifically incorporated by reference into such documents. You should direct any requests for documents to GTx, Inc., Attention: Corporate Secretary, 175 Toyota Plaza, 7th Floor, Memphis, TN 38103. Our phone number is (901) 523-9700.

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PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table sets forth the estimated costs and expenses payable by the registrant in connection with the common stock being registered. The selling stockholders will not bear any portion of such expenses. All the amounts shown are estimates, except for the SEC registration fee.

	<u>Amount</u>
SEC registration fee	\$ 8,570
Accounting fees and expenses	15,000
Legal fees and expenses	150,000
Printing and miscellaneous fees and expenses	30,000
Total	<u>\$ 203,570</u>

Item 15. 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.

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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.

The securities purchaser agreement that the registrant entered into with the selling stockholders identified in the prospectus included in this registration statement provides for cross-indemnification in connection with registration of the registrant's common stock on behalf of such selling stockholders, including for some liabilities arising under the Securities Act.

Item 16. Exhibits

Exhibit Number	Exhibit Description	Incorporation By Reference			
		Form	SEC File No.	Exhibit	Filing Date
4.1	Restated Certificate of Incorporation of GTx, Inc.	S-3	333-127175	4.1	08/04/2005
4.2	Certificate of Amendment of Restated Certificate of Incorporation of GTx, Inc.	8-K	000-50549	3.2	05/06/2011
4.3	Certificate of Amendment of Restated Certificate of Incorporation of GTx, Inc.	8-K	000-50549	3.3	05/09/2014
4.4	Certificate of Amendment of Restated Certificate of Incorporation of GTx, Inc.	10-Q	000-50549	3.4	05/11/2015
4.5	Certificate of Amendment of Restated Certificate of Incorporation of GTx, Inc.	8-K	000-50549	3.1	12/05/2016
4.6	Amended and Restated Bylaws of GTx, Inc.	8-K	000-50549	3.2	07/26/2007
4.7	Specimen of Common Stock Certificate	S-1	333-109700	4.2	12/22/2003
4.8	Securities Purchase Agreement, dated September 25, 2017, between GTx, Inc. and the purchasers identified in Exhibit A therein	8-K	000-50549	10.1	09/29/2017
4.9+	Form of Common Stock Warrant, issued on September 29, 2017 by GTx, Inc. pursuant to the Securities Purchase Agreement, dated September 25, 2017, between GTx, Inc. and the purchasers identified in Exhibit A therein	—	—	—	—
5.1+	Opinion of Cooley LLP	—	—	—	—
23.1+	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm	—	—	—	—
23.2+	Consent of Cooley LLP (included in Exhibit 5.1)	—	—	—	—
24.1+	Power of Attorney (contained on the signature pages hereto)	—	—	—	—

+ Filed herewith.

Item 17. Undertakings

The undersigned registrant hereby undertakes:

(1) 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

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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% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(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 (1)(i), (1)(ii) and (1)(iii) 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 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) 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 therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) 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.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser, if the registrant is subject to Rule 430C, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.

(6) That, for the purpose of determining liability of the registrant 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

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be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

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 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-3 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 October 20, 2017.

GTX, INC.

By: /s/ MARC S. HANOVER

Marc S. Hanover

Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Marc S. Hanover, Robert J. Wills, Henry P. Doggrell and Jason T. Shackelford, and each of them severally, as true and lawful attorneys-in-fact and agents, with full powers of substitution and resubstitution, for them and in their name, place and stead, in any and all capacities, to sign any and all amendments (including pre-effective and 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, and generally to do all such things in their names and behalf in their capacities as officers and/or directors to enable GTX, Inc. to comply with the provisions of the Securities Act of 1933, as amended, and all requirements of the Securities and Exchange Commission, 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 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, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated:

<u>Signatures</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>	October 20, 2017
<u>/s/ JASON T. SHACKELFORD</u> Jason T. Shackelford	Vice President, Finance and Accounting, and Principal Financial and Accounting Officer <i>(Principal Financial and Accounting Officer)</i>	October 20, 2017
<u>/s/ ROBERT J. WILLS</u> Robert J. Wills, Ph.D.	Executive Chairman of the Board of Directors	October 20, 2017
<u>/s/ MICHAEL G. CARTER</u> Michael G. Carter, M.D.	Director	October 20, 2017
<u>/s/ J.R. HYDE, III</u> J.R. Hyde, III	Director	October 20, 2017
<u>/s/ J. KENNETH GLASS</u> J. Kenneth Glass	Director	October 20, 2017
<u>/s/ GARRY A. NEIL</u> Garry A. Neil, M.D.	Director	October 20, 2017
<u>/s/ KENNETH S. ROBINSON</u> Kenneth S. Robinson, M.D., M.Div.	Director	October 20, 2017

FORM OF WARRANT

NEITHER THIS WARRANT, NOR THE SECURITIES ISSUABLE UPON EXERCISE OF THIS WARRANT (COLLECTIVELY, THE “SECURITIES”), HAVE BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “SECURITIES ACT”), OR UNDER ANY STATE SECURITIES OR BLUE SKY LAWS. THE SECURITIES ARE SUBJECT TO RESTRICTIONS ON TRANSFERABILITY AND RESALE AND MAY NOT BE OFFERED, SOLD, PLEDGED, HYPOTHECATED OR OTHERWISE TRANSFERRED EXCEPT AS PERMITTED UNDER THE SECURITIES ACT AND APPLICABLE STATE SECURITIES OR BLUE SKY LAWS, PURSUANT TO REGISTRATION OR QUALIFICATION OR EXEMPTION THEREFROM. INVESTORS SHOULD BE AWARE THAT THEY MAY BE REQUIRED TO BEAR THE FINANCIAL RISKS OF THIS INVESTMENT FOR AN INDEFINITE PERIOD OF TIME. THE COMPANY MAY REQUIRE AN OPINION OF COUNSEL IN FORM AND SUBSTANCE REASONABLY SATISFACTORY TO THE COMPANY TO THE EFFECT THAT ANY PROPOSED TRANSFER IS IN COMPLIANCE WITH THE SECURITIES ACT AND ANY APPLICABLE STATE SECURITIES OR BLUE SKY LAWS. THIS WARRANT IS SUBJECT TO THE TRANSFER RESTRICTIONS SET FORTH HEREIN AND IN A SECURITIES PURCHASE AGREEMENT, DATED AS OF SEPTEMBER 25, 2017, AND AS AMENDED FROM TIME TO TIME, COPIES OF WHICH ARE AVAILABLE WITH THE SECRETARY OF THE COMPANY. THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT WITH A REGISTERED BROKER-DEALER OR OTHER LOAN WITH A FINANCIAL INSTITUTION THAT IS AN “ACCREDITED INVESTOR” AS DEFINED IN RULE 501(a) UNDER THE SECURITIES ACT OR OTHER LOAN SECURED BY SUCH SECURITIES.

GTX, INC.

COMMON STOCK WARRANT

Warrant No. CSW2017-[-]

Date of Original Issuance: September 29, 2017

GTx, Inc., a Delaware corporation (the “Company”), hereby certifies that, for value received, [-], or its registered assign (the “Holder”), is entitled to purchase from the Company [-] shares (as adjusted from time to time as provided in Section 11) of common stock, par value \$0.001 per share, of the Company (the “Common Stock”) (each such share, a “Warrant Share” and all such shares, the “Warrant Shares”), at the Exercise Price determined pursuant to Section 3 hereof, at any time and from time to time on or after the Issuance Date and through and including September 29, 2022 (the “Expiration Date”), and subject to the following terms and conditions:

1. Purchase Agreement. This Common Stock Warrant (this “Warrant”) is one of the Warrants issued by the Company in connection with that certain Securities Purchase Agreement, entered into on September 25, 2017 (as amended from time to time, the “Purchase Agreement”), by and among the Company and Holder and certain other Purchasers, and is subject to, and the Company and the Holder shall be bound by, all the applicable terms, conditions and provisions of the Purchase Agreement.

2. Definitions. In addition to the terms defined elsewhere in this Warrant, capitalized terms that are not otherwise defined herein shall have the meanings assigned to such terms in the Purchase Agreement. As used herein, the following terms shall have the following respective meanings:

(a) “Eligible Market” means any of the NYSE American, The NASDAQ Capital Market, The NASDAQ Global Market, The NASDAQ Global Select Market, or the New York Stock Exchange (or any successors to any of the foregoing).

(b) “Fair Market Value” of one share of Common Stock as of the Date of Exercise means (i) the closing sales price of the Common Stock, as reported by Bloomberg Financial Markets (or a comparable reporting service of national reputation selected by the Company and reasonably acceptable to the Holder if Bloomberg Financial Markets is not then reporting sales prices of such security) (collectively, “Bloomberg”), on the

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Trading Day immediately prior to the Date of Exercise, or (ii) if an Eligible Market is not then the Principal Trading Market, the average of the reported sales prices reported by Bloomberg on the Trading Market for the Common Stock on the Trading Day immediately prior to the Date of Exercise, or, if there is no sales price on such Trading Day, the last bid price reported by Bloomberg for such Trading Day, or (iii) if neither of the foregoing applies, the last sales price of the Common Stock in the over-the-counter market as reported on the OTC Pink marketplace maintained by OTC Markets Group Inc. (formerly Pink Sheets LLC) (or any similar organization or agency succeeding to its functions of reporting prices) for the Common Stock as reported by Bloomberg, or if no sales price is so reported for the Common Stock, the last bid price of such Common Stock as reported by Bloomberg or (iv) if fair market value cannot be calculated as of such date on any of the foregoing bases, the fair market value shall be as determined by the Board of Directors in the exercise of its good faith judgment.

(c) “Issuance Date” means September 29, 2017, the date this Warrant was originally issued.

(d) “Principal Trading Market” means the Trading Market on which the Common Stock is primarily listed on and quoted for trading.

(e) “Shares” means the Company’s currently authorized common stock, \$0.001 par value, and stock of any other class or other consideration into which such currently authorized capital stock may hereafter have been changed.

(f) “Trading Day” means (a) a day on which the Common Stock is listed or quoted and traded on the Principal Trading Market (other than the OTC Bulletin Board), or (b) if the Common Stock is not then listed or quoted and traded on any Eligible Market, then a day on which the Common Stock is traded in the over-the-counter market, as reported by the OTC Bulletin Board, or (c) if the Common Stock is not quoted on any Trading Market, a day on which the Common Stock is quoted in the over-the-counter market as reported on the OTC Pink marketplace maintained by OTC Markets Group Inc. (formerly Pink Sheets LLC) (or any similar organization or agency succeeding to its functions of reporting prices); *provided*, that in the event that the Common Stock is not listed or quoted as set forth in (a), (b) and (c) hereof, then Trading Day shall mean a Business Day.

(g) “Trading Market” means the OTC Bulletin Board or any Eligible Market, or any national securities exchange, market or trading or quotation facility on which the Common Stock is then listed or quoted.

3. Exercise Price. This Warrant may be exercised for a price per Warrant Share equal to \$9.02, subject to adjustment from time to time pursuant to Section 11 (the “Exercise Price”).

4. Registration of Warrant. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the “Warrant Register”), in the name of the record Holder hereof from time to time. The Company may deem and treat the Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

5. Transfer of Warrant.

(a) Subject to the Holder’s appropriate compliance with the restrictive legend on this Warrant and the transfer restrictions set forth herein and in the Purchase Agreement, this Warrant and all rights hereunder are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, and the Company shall register the transfer of any portion of this Warrant in the Warrant Register, upon (i) surrender of this Warrant, with the Form of Assignment substantially in the form attached hereto as Attachment B duly completed and signed, to the Company at its address specified herein and (ii) delivery to the Company, at its address specified herein, an investment letter and accredited investor and Securities Act Rule 506(d) “bad actor” questionnaires, in form and substance reasonably satisfactory to the Company, each signed by the transferee. Upon any such registration or transfer, a new Warrant to purchase Common Stock, in substantially the form of this Warrant (any such new Warrant, a “New Warrant”), evidencing the portion of this Warrant so transferred shall be issued to the transferee and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this

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Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date the Holder delivers Form of Assignment to the Company assigning this Warrant full. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations of a holder of a Warrant; provided, however, the failure of the Company to deliver a New Warrant shall not preclude the transferee from exercising its rights for the purchase of Warrant shares so transferred in accordance with this Section 5.

(b) Notwithstanding the foregoing, the Holder agrees not to sell, assign, transfer, pledge or otherwise transfer this Warrant, or any beneficial interest therein, to any person (other than the Company) unless and until the proposed transferee confirms to the reasonable satisfaction of the Company that (i) the proposed transferee is an “accredited investor” as defined in Rule 501(a) under the Securities Act and (ii) neither the proposed transferee nor any of its directors, executive officers, other officers that may serve as a director or officer of any company in which it invests, general partners or managing members nor any person that would be deemed a beneficial owner of those securities (in accordance with Rule 506(d) of the Securities Act) is subject to any of the “bad actor” disqualifications described in Rule 506(d)(1)(i) through (viii) under the Securities Act, except as set forth in Rule 506(d)(2) (ii) or (iii) or (d)(3) under the Securities Act and disclosed, reasonably in advance of the transfer, in writing in reasonable detail to the Company. The Holder will promptly notify the Company in writing if the Holder or, to the Holder’s knowledge, any person specified in Rule 506(d)(1) under the Securities Act becomes subject to any of the “bad actor” disqualifications described in Rule 506(d)(1)(i) through (viii) under the Securities Act.

6. Duration and Exercise of Warrant. This Warrant shall be exercisable by the registered Holder at any time and from time to time on or after the Issuance Date and through and including the Expiration Date. At 6:30 p.m., New York City time, on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value.

7. Delivery of Warrant Shares; Net Exercise.

(a) To effect exercises hereunder, the Holder shall not be required to physically surrender this Warrant, and unless this Warrant is surrendered upon such exercise, the execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a new Warrant evidencing the right to purchase the remaining number of Warrant Shares (if any). If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. Upon delivery of an Exercise Notice substantially in the form attached hereto as Attachment A (an “Exercise Notice”) to the Company at its address for notice determined as set forth herein, and upon payment of the Exercise Price for the number of Warrant Shares so indicated by the Holder to be purchased (which may take the form a “net exercise” pursuant to Section 7(c)), the Company shall, not later than two (2) Trading Days after the Date of Exercise (the “Share Delivery Date”), issue and deliver, or cause its transfer agent to issue and deliver, the Warrant Shares issuable upon such exercise to the Holder (i) by crediting the account of the Holder’s or its designee’s balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system (“DWAC”) if both (A) the Company is then a participant in such system and (B) such Warrant Shares are required to be issued free of all restrictive legends in accordance with the terms of the Purchase Agreement, or otherwise (ii) by either (A) physical delivery of a certificate for such Warrant Shares registered in the name of the Holder or its designee or (B) electronically in the name of the Holder or its designee through the Direct Registration System, which such instrument, to the extent provided for in the Purchase Agreement, shall be free of restrictive legends and trading restrictions. No ink-original Exercise Notice shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Exercise Notice form be required. A “Date of Exercise” means the date on which the Holder shall have delivered to the Company: (1) an Exercise Notice, appropriately completed and duly signed, and (2) unless the exercise of this Warrant is being effected as a “net exercise” pursuant to Section 7(c), payment of the Exercise Price (by certified or official bank check, intra-bank account transfer or wire transfer) for the number of Warrant Shares so indicated by the Holder to be purchased. Upon delivery of the Exercise Notice, the Holder shall be deemed for all corporate purposes to have

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become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares.

(b) In connection with any exercise of this Warrant (other than an Expiring Exercise (as defined below)), if the Company shall fail for any reason to deliver the Warrant Shares by the Share Delivery Date, and if on or after the Share Delivery Date the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of any portion of such Warrant Shares that the Holder

anticipated receiving by the Share Delivery Date (a “Buy-In”), then the Company shall, within two (2) Trading Days after the Holder’s request and in the Holder’s discretion, either: (i) pay cash to the Holder in an amount equal to the Holder’s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased by the Holder (the “Buy-In Price”), at which point the Company’s obligation to deliver such Warrant Shares shall terminate, or (ii) promptly honor its obligation to deliver to the Holder such Warrant Shares as provided above and pay cash to the Holder in an amount equal to the excess (if any) of the Buy-In Price over the product of (A) such number of Warrant Shares, times (B) the Fair Market Value of one share of Common Stock as of the Date of Exercise. Alternatively, if the Company fails to cause the transfer agent to transmit to the Holder the Warrant Shares pursuant to Section 7(a) by the Share Delivery Date, then the Holder may, within (2) Trading Days following the Share Delivery Date, rescind such exercise, in which case, if so rescinded, the Company shall be under no obligation to make any cash payments to the Holder pursuant to this Section 7(b) relating to or arising from such rescinded exercise. In connection with the foregoing, the Holder agrees to use its reasonable efforts to notify the Company in advance of any pending exercise of this Warrant in order to enable to the Company to deliver the Warrant Shares by the Share Delivery Date.

(c) In lieu of exercising this Warrant by payment of cash, the Holder may, at its election, at any time on or prior to the Expiration Date, effect a “net exercise” of this Warrant as indicated in the Holder’s Exercise Notice, in which event, if so effected, the Holder shall be entitled to receive Warrant Shares equal to the value (as determined below) of this Warrant (or the portion thereof being exercised) by surrender of this Warrant at the principal office of the Company, if applicable, together with the appropriately completed and duly signed Exercise Notice, in which event the Company shall issue to the Holder a number of Warrant Shares computed using the following formula:

$$X = \frac{Y*(A-B)}{A}$$

Where:

X = the number of Warrant Shares to be issued to the Holder

Y = the number of Warrant Shares with respect to which this Warrant is being exercised

A = the Fair Market Value of one share of Common Stock (as of the Date of Exercise)

B = Exercise Price (as of the Date of Exercise)

For the avoidance of doubt, if the foregoing calculation results in zero or a negative number, then no Warrant Shares shall be issued upon exercise pursuant to this Section 7(c).

Notwithstanding anything contained herein to the contrary, if an exemption from registration under the Securities Act is not available to the Company for an exercise of this Warrant for cash at the time the Holder elects to exercise this Warrant, then the exercise of this Warrant may only be effected as a “net exercise” pursuant to this Section 7(c).

In addition, notwithstanding anything herein to the contrary, on the Expiration Date, any unexercised portion of this this Warrant shall be automatically exercised via “net exercise” pursuant to this Section.

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Z(c) (an “Expiring Exercise”), and any Warrant Shares issued upon such exercise shall be delivered in certificated form to the Holder at its address then appearing on the Warrant Register.

(d) The Company’s obligations to issue and deliver Warrant Shares in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Nothing herein shall limit a Holder’s right to pursue any other remedies available to it hereunder, at law or in equity, including a decree of specific performance and/or injunctive relief with respect to the Company’s failure to timely deliver the certificates representing shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof; provided, however, that under no circumstances shall the Company be required to settle any exercises of this Warrant by cash payment or to otherwise “net cash settle” this Warrant.

8. Charges, Taxes and Expenses. Issuance and delivery of certificated or uncertificated shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, withholding tax, transfer agent fee, or other incidental tax or expense in respect of the issuance of such shares, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or Warrants in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

9. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a new Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction and customary and reasonable indemnity (which shall not include a surety bond), if requested. Applicants for a new warrant under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe. If a new warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver this mutilated Warrant to the Company as a condition precedent to the Company’s obligation to issue the new warrant.

10. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares which are then issuable and deliverable upon the exercise of this entire Warrant, free from liens, encumbrances or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 11).

The Company covenants and warrants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and non-assessable.

11. Certain Adjustments. The Exercise Price and the number of Warrant Shares issuable upon exercise of this Warrant is subject to adjustment from time to time as set forth in this Section 11.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of Common Stock any shares of capital stock of the Company; then in each such case (A) the Exercise Price will be adjusted by multiplying the Exercise Price then in effect by a fraction, the numerator of which equals the number of shares of Common Stock outstanding immediately prior to such event (excluding treasury shares, if any), and the denominator of which equals the number of shares of Common Stock outstanding immediately after such event (excluding treasury shares, if any), and (B) the number of Warrant Shares issuable hereunder shall be concurrently adjusted by multiplying such number by the

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reciprocal of such fraction. Such adjustments will take effect (i) if a record date shall have been fixed for determining the stockholders or security holders, as applicable, of the Company entitled to receive such dividend, distribution or issuance by reclassification, as the case may be, immediately after such record date, (ii) otherwise, immediately after the effective date of such dividend, distribution, subdivision, combination, or issuance by reclassification, as the case may be.

(b) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or a series of related transactions, (A) effects any merger, consolidation or reorganization or other similar transaction or a series of related transactions which results in the voting securities of the Company outstanding immediately prior thereto representing immediately thereafter (either by remaining outstanding or by being converted into voting securities of the surviving or acquiring entity) less than 50% of the combined voting power of the voting securities of or economic interests in the Company or such surviving or acquiring entity outstanding immediately after such merger, consolidation or reorganization, (B) effects any sale, lease, license, assignment, transfer, conveyance, distribution or other disposition of all or substantially all of its assets, (C) effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (except for the events contemplated by Section 11(a)), or (D) consummates a stock or share purchase agreement or other business combination (including a reorganization, recapitalization, spin-off or scheme of arrangement) with another Person or "group" (within the meaning of Section 13(d) or 14(d) of the Exchange Act) whereby such other Person or "group" acquires more than 50% of the voting power of or economic interests in the then outstanding shares of capital stock of the Company (after giving effect to such transaction); or (ii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person or group of Persons) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property (each transaction or series of transactions referred to in clause (i) or (ii) above, a "Fundamental Transaction"); then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction (without regard to any limitation in Section 12 on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 12 on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 11(b) prior to such Fundamental Transaction and shall, at the option of the Holder and to the extent applicable in light of the structure of the Fundamental Transaction, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) (only the extent such capital stock is the form of consideration paid in the Fundamental Transaction) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations in Section 12 on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the Exercise Price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price). Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant and the other Transaction

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Documents with the same effect as if such Successor Entity had been named as the Company herein. The provisions of this Section 11(b) shall similarly apply to successive Fundamental Transactions.

(c) Adjustment Rules.

(i) Any adjustments pursuant to this Section 11 shall be made successively whenever any event referred to herein shall occur, except that, notwithstanding any other provision of this Section 11, no adjustment shall be made to the number of Warrant Shares to be delivered to the Holder (or to the Exercise Price) if such adjustment represents less than 1% of the number of Warrant Shares previously required to be so delivered, but any lesser adjustment shall be carried forward and shall be made at the time and together with the next subsequent adjustment which together with any adjustments so carried forward shall amount to 1% or more of the number of Warrant Shares to be so delivered.

(ii) No adjustments shall be made pursuant to this Section 11 in respect of the issuance of Warrant Shares upon exercise of the Warrant.

(iii) If the Company shall take a record of the holders of its shares for any purpose referred to in this Section 11, then (x) such record date shall be deemed to be the date of the issuance, sale, distribution or grant in question and (y) if the Company shall legally abandon such action prior to effecting such action, no adjustment shall be made pursuant to this Section 11 in respect of such action.

(iv) In computing adjustments under this Section 11, (A) fractional interests in Warrant Shares shall be taken into account to the nearest one-thousandth of a Warrant Share, and (B) calculations of the Exercise Price shall be carried to the nearest one-thousandth of one cent.

(d) Proceedings Prior to Any Action Requiring Adjustment. Subject to the below proviso, as a condition precedent to the taking of any action which would require an adjustment pursuant to this Section 11, the Company shall take any action which may be necessary, including obtaining regulatory approvals or exemptions, in order that the Company may thereafter validly and legally issue as fully paid and non-assessable all Warrant Shares which the Holder is entitled to receive upon exercise of the Warrant.

(e) Notice of Adjustment. Not less than 20 days prior to the record date or effective date, as the case may be, of any action which requires or might require an adjustment or readjustment pursuant to this Section 11, the Company shall give notice to the Holder of such event, describing such event in reasonable detail and specifying the record date or effective date, as the case may be, and, if determinable, the required adjustment and computation thereof; provided, however, that such notice will not include (nor be required to include) any information that constitutes, or that the Company reasonably believes constitutes, material non-public information, unless prior thereto the Holder shall have consented to the receipt of such material non-public information and agreed with the Company to keep such material non-public information confidential. If the required adjustment is not determinable as the time of such notice, the Company shall give notice to the Holder of such adjustment and computation as soon as reasonably practicable after such adjustment becomes determinable. In connection with any such adjustment or readjustment, the Company shall prepare a report setting forth such adjustment or readjustment and showing in reasonable detail the method of calculation thereof and the facts upon which such adjustment or readjustment is based, including a statement of (i) the number of Shares outstanding or deemed to be outstanding, and (ii) the Exercise Price in effect immediately prior to such issue or sale and as adjusted and readjusted (if required by this Section 11) on account thereof. The Company will forthwith mail a copy of each such report to the Holder and will, upon the written request at any time of the Holder, furnish to such holder a like report setting forth the Exercise Price at the time in effect and showing in reasonable detail how it was calculated. The Company will also keep copies of all such reports at its office and will cause the same to be available for inspection at such office during normal business hours by the Holder. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

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(f) Disputes. Any dispute which arises between the Holder and the Company with respect to the calculation of the adjusted Exercise Price or Warrant Shares issuable upon exercise shall be determined by the independent auditors of the Company in accordance with the terms of this Warrant, and such determination shall be binding upon the Company and the holders of the Warrants and the Warrant Shares if made in good faith and without manifest error.

12. Intentionally Omitted [Limitation on Exercise]. Notwithstanding anything to the contrary contained herein, the number of Warrant Shares that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to ensure that, following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by the Holder and any other Persons whose beneficial ownership of shares of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed [·] of the total number of then issued and outstanding shares of Common Stock (including for such purpose the Warrant Shares issuable upon such exercise). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to such Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and such Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 12 applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by such Holder) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by such Holder) and of which portion of this Warrant is exercisable, in each case subject to such aggregate percentage limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 12, in determining the number of outstanding shares of Common Stock, the Holder may rely on the number of outstanding shares of Common Stock as reflected in (x) the Company's most recent Form 10-Q or Form 10-K, as the case may be, (y) a more recent public announcement by the Company or (z) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of the Holder, the Company shall within three Business Days confirm orally and in writing to such Holder the number of outstanding shares of Common Stock. This provision shall not restrict the number of shares of Common Stock which a Holder may receive or beneficially own in order to determine the amount of securities or other consideration that such Holder may receive in the event of a transaction contemplated in Section 11 of this Warrant. By written notice to the Company, which will not be effective until the 61st day after such notice is delivered to the Company, the Holder may waive or amend the provisions of this Section 12 to change the beneficial ownership limitation to any other number[, provided such number does not exceed [·] of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant], and the provisions of this Section 12 and Section 13 shall continue to apply.]

13. Beneficial Ownership Limitation. Notwithstanding anything to the contrary contained herein, the Company shall not effect any exercise of this Warrant, and the Holder shall not have the right to exercise this Warrant, for a number of Warrant Shares in excess of that number of Warrant Shares that, upon giving effect to such exercise, would cause (a) the aggregate number of shares of Common Stock beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act to exceed [·] of the total number of shares of the Common Stock outstanding following such exercise, or (b) the combined voting power of the securities of the Company beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act to exceed [·] of the combined voting power of all of the securities of the Company outstanding following such exercise. For purposes of the foregoing sentence, the number of shares of Common Stock or voting securities beneficially owned by the Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude shares of Common Stock or other voting securities which would be issuable upon

(i) exercise of the remaining, unexercised portion of this Warrant and (ii) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company beneficially owned by the Holder or any of its Affiliates and other

Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act (including, without limitation, any convertible notes or convertible preferred stock or warrants) subject to a limitation on conversion or exercise analogous to the limitation contained in this Section 13. Except as set forth in the preceding sentence, for purposes of this Section 13, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. The provisions of this Section 13 shall be construed, corrected and implemented in a manner so as to effectuate the intended beneficial ownership limitation herein contained.

14. No Fractional Shares. No fractional shares of Common Stock will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares which would otherwise be issuable, the Company shall pay the Holder an amount of cash equal to the product of such fraction multiplied by the Fair Market Value of one share of Common Stock as of the Date of Exercise.

15. No Impairment. The Company shall not by any action including, without limitation, amending its Certificate of Incorporation, any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but shall at all times in good faith assist in the carrying out of all such terms and in the taking of all such action, as may be necessary or appropriate to protect the rights of the Holder against impairment. Without limiting the generality of the foregoing, the Company shall take all such action as may be necessary or appropriate in order that the Company may validly issue fully paid and nonassessable shares of Common Stock upon the exercise of this Warrant at the then Exercise Price therefor.

16. No Rights as a Stockholder; Notice to Holder. Nothing contained in this Warrant shall be construed as conferring upon the Holder the right to vote or to consent or to receive notice as a stockholder in respect of any meeting of stockholders for the election of directors of the Company or any other matter, or any rights whatsoever as a stockholder of the Company.

17. Warrant Agent. The Company shall serve as warrant agent under this Warrant. Upon thirty (30) days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or stockholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

18. Miscellaneous.

(a) Notices. Any and all notices or other communications or deliveries hereunder (including any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number pursuant to this Section 18(a) prior to 5:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified pursuant to this Section 18(a) on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by nationally recognized overnight courier service to the street address specified pursuant to this Section 18(a), or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be as follows:

(i) if to the Company, to:

GTx, Inc.
175 Toyota Plaza
7th Floor
Memphis, Tennessee 38103
Attn: Principal Financial Officer or Chief Legal Officer

Facsimile: (901) 844-8075

with a copy to (which shall not constitute notice to the Company):

Cooley LLP
101 California Street, 5th Floor
San Francisco, California 94111-5800
Attn: Chadwick L. Mills
Facsimile: (415) 693-2222

(ii) if to the Holder, to the address, facsimile number or street address appearing on the Warrant Register (which shall initially be the facsimile number and street address set forth for the initial Holder in the Purchase Agreement);

or to such other address, facsimile number or email address as the Company or the Holder may provide to the other in accordance with this Section 18(a).

(b) Assignment. Subject to the restrictions on transfer described herein and in the Purchase Agreement, the rights and obligations of the Company and the Holder shall be binding upon, and inure to the benefit of, the successors, assigns, heirs, administrators and transferees of the parties. Without the prior written consent of the Holder, which may be withheld in the Holder's sole discretion, this Warrant may not be assigned by the Company except to a successor in the event of a Fundamental Transaction.

(c) No Third Party Beneficiaries. Nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(d) Amendments; Waiver. Any term of this Warrant may be amended or waived (either generally or in a particular instance and either retroactively or prospectively) with the written consent of the Company and the Holder. No waiver of any default with respect to any provision, condition or requirement of this Warrant shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

(e) Governing Law. This Warrant shall be governed by and construed in accordance with the laws of the State of Delaware, without regard to principles of conflict of laws.

(f) Severability. If one or more provisions of this Warrant are held to be unenforceable under applicable law in any respect, such provision shall be excluded from this Warrant and the balance of this Warrant shall be construed and interpreted as if such provision were so excluded and shall be enforceable in accordance with its remaining terms.

(g) Nonwaiver and Expenses. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies. Without limiting any other provision of this Warrant or the Purchase Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable attorneys' fees, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

(h) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Warrant Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

[Remainder of Page Intentionally Left Blank; Signature Page Follows]

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IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

GTx, INC.

By:

Name: Marc S. Hanover

Title: Chief Executive Officer

[Signature Page — Warrant]

ATTACHMENT A

EXERCISE NOTICE

To GTx, Inc.:

The undersigned hereby irrevocably elects to purchase shares (the "Shares") of common stock, par value \$0.001 per share ("Common Stock"), of GTx, Inc., a Delaware corporation, pursuant to Warrant No. CSW2017-[·], originally issued on September 29, 2017 (the "Warrant"). The undersigned elects to utilize the following manner of exercise:

Shares:

- Full Exercise of Warrant
- Partial Exercise of Warrant (in the amount of Shares)

Exercise Price: \$

The Holder intends that payment of the Exercise Price shall be made as (check one):

- "Net Exercise" under Section 7(c) of the Warrant
- Certified or Official Bank Check
- Intra-Bank Account Transfer
- Wire Transfer

[Please issue a new Warrant for the unexercised portion of the attached Warrant in the name of the [undersigned]/[the undersigned's nominee as is specified below].]

Date: _____
Full Name of Holder: _____

Signature of Holder or Authorized Representative: _____
Name and Title of Authorized Representative††: _____
Additional Signature of Holder (if jointly held): _____
Social Security or Tax Identification Number: _____
Address of Holder: _____

Full Name of Nominee of Holder††: _____
Address of Nominee of Holder††: _____

If the shares are to be delivered via DTC DWAC as permitted by the Warrant, please complete the DTC DWAC information below:

Name of DTC Participant (broker-dealer at which the account to be credited
with the Warrant Shares is maintained): _____
DTC Participant Number: _____
Name of Account at DTC Participant being credited with the Warrant Shares: _____

Account Number at DTC Participant being credited with the Warrant Shares: _____
Person to contact to initiate DWAC: _____

Name: _____
Tel: _____
Email: _____

† Must conform in all respects to name of holder as specified on the face of the Warrant.
†† If applicable.

ATTACHMENT B

FORM OF ASSIGNMENT

[To be completed and signed only upon transfer of Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the right represented by the attached Common Stock Warrant to purchase _____ shares of Common Stock of GTx, Inc., a Delaware corporation (the "Company"), to which the Warrant relates and appoints _____ as attorney to transfer said right on the books of the Company with full power of substitution in the premises.

Date: _____
Full Name of Holder*: _____
Signature of Holder or Authorized Representative: _____
Name and Title of Authorized Representative†: _____
Additional Signature of Holder (if jointly held): _____
Address of Holder: _____

Full Name of Transferee: _____
Address of Transferee: _____

In the presence of: _____

* Must conform in all respects to name of holder as specified on the face of the Warrant.
† If applicable.



Chadwick L. Mills
 +1 650 843 5654
 cmills@cooley.com

October 20, 2017

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

Ladies and Gentlemen:

We have acted as counsel to GTx, Inc., a Delaware corporation (the “**Company**”), with respect to certain matters in connection with the filing by the Company of a Registration Statement on Form S-3 (the “**Registration Statement**”) with the Securities and Exchange Commission, including a prospectus that forms a part of the Registration Statement (the “**Prospectus**”), covering the registration for resale of 8,773,308 shares (the “**Shares**”) of the Company’s common stock, par value \$0.001 per share (the “**Common Stock**”), including: (a) 5,483,320 Shares that are currently outstanding (the “**Placement Shares**”), and (b) 3,289,988 Shares (the “**Warrant Shares**”) issuable upon the exercise of certain warrants to purchase Common Stock (the “**Warrants**”), in each case as held by the respective selling stockholders identified in the Prospectus.

In connection with this opinion, we have examined and relied upon (a) the Registration Statement and the Prospectus, (b) the Warrants, (c) the Company’s Restated Certificate of Incorporation, as amended, and Amended and Restated Bylaws, each as currently in effect and in effect at the time of the issuance of the Placement Shares, and (d) originals, or copies certified to our satisfaction, of such records, documents, certificates, opinions, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not sought independently to verify such matters. We have assumed the genuineness and authenticity of all signatures on original documents; the authenticity of all documents submitted to us as originals; the conformity to originals of all documents submitted to us as copies thereof; and the accuracy, completeness and authenticity of certificates of public officials.

Our opinion herein is expressed solely with respect to the General Corporation Law of the State of Delaware. We express no opinion to the extent that the laws of any other jurisdiction are applicable to the subject matter hereof and no opinion as to compliance with any federal or state securities law, rule or regulation. .

We express no opinion to the extent that, notwithstanding its current reservation of shares of Common Stock, future issuances of securities of the Company, including the Warrant Shares, and/or adjustments to outstanding securities of the Company, including the Warrants, may cause the Warrants to be exercisable for more shares of Common Stock than the number that remain authorized but unissued. Further, we have assumed the exercise price of the Warrants will not be adjusted to an amount below the par value per share of the Common Stock.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that, the Placement Shares have been validly issued, and are fully paid and nonassessable, and that the Warrant Shares, when issued and sold in accordance with the terms of the Warrants, will be validly issued, fully paid and nonassessable.

Cooley LLP 101 California Street 5th Floor San Francisco, CA 94111-5800
 t: (415) 693-2000 f: (415) 693-2222 cooley.com

We hereby consent to the reference to our firm under the caption “Validity of Common Stock” in the Prospectus and to the filing of this opinion as an exhibit to the Registration Statement.

Sincerely,

Cooley LLP

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

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption "Experts" in the Registration Statement (Form S-3) and related Prospectus of GTx, Inc., for the registration of 8,773,308 shares of its common stock, and to the incorporation by reference therein of our reports dated March 24, 2017, 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, 2016, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Memphis, Tennessee

October 20, 2017
