

PROSPECTUS SUPPLEMENT
(To the Prospectus Dated January 5, 2018)**2,581,867 Shares of Common Stock**

Pursuant to this prospectus supplement and the accompanying prospectus, we are offering to certain institutional and accredited investors 2,581,867 shares of our common stock at a purchase price of \$2.3825 per share, for gross proceeds of approximately \$6.2 million. In a concurrent private placement, we are selling to such investors warrants to purchase up to 1,290,933 shares of our common stock, which represent 50% of the number of shares of our common stock being purchased in this offering, or the Warrants. The Warrants and the shares of our common stock issuable upon the exercise of the Warrants are not being registered under the Securities Act of 1933, as amended, or the Securities Act, are not being offered pursuant to this prospectus supplement and the accompanying prospectus and are being offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. There is no established public trading market for the Warrants, and we do not expect a market to develop. In addition, we do not intend to list the Warrants on the Nasdaq Capital Market, any other national securities exchange or any other nationally recognized trading system.

Our common stock is listed on the Nasdaq Capital Market under the symbol "ONCT". On July 16, 2020, the last reported sale price per share of our common stock was \$2.35 per share.

As of July 16, 2020, the aggregate market value of our outstanding common stock held by non-affiliates pursuant to General Instruction I.B.6 of Form S-3, or public float, was approximately \$44.4 million, based on 13,731,867 shares of outstanding common stock held by non-affiliates as of such date and a price of \$3.23 per share, which was the last reported sale price of our common stock on the Nasdaq Capital Market on June 2, 2020. Other than the approximately \$5.0 million offering of our common stock that closed on May 21, 2020, we have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 during the prior 12 calendar month period that ends on and includes the date of this prospectus. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a primary offering using shelf registration statements, including under this prospectus supplement, with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below \$75.0 million.

Investing in our securities involves a high degree of risk. See "[Risk Factors](#)" beginning on page S-6 of this prospectus supplement and in the documents incorporated by reference into this prospectus supplement.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus supplement or the accompanying prospectus. Any representation to the contrary is a criminal offense.

We have engaged H.C. Wainwright & Co., LLC, or the placement agent, as our exclusive placement agent in connection with this offering. The placement agent has no obligation to buy any of the securities from us or to arrange for the purchase or sale of any specific number or dollar amount of the securities. We have agreed to pay the placement agent the fees set forth in the table below. See "Plan of Distribution" beginning on page S-10 of this prospectus supplement for more information regarding these arrangements.

<u>Common Stock</u>	<u>Per Share</u>	<u>Total</u>
Offering price	\$2.382500	\$6,151,298
Placement agent fees(1)	\$0.166775	\$ 246,923
Proceeds, before expenses, to us(2)	\$2.215725	\$5,904,375

- (1) There will be no placement agent fees paid with respect to 1,101,289 shares sold to certain of our affiliates. We have also agreed to (i) pay the placement agent a management fee equal to 1.0% of the gross proceeds raised in this offering, (ii) issue warrants to purchase up to 154,912 shares of common stock to the placement agent and (iii) pay the placement agent for certain expenses. See "Plan of Distribution" beginning on page S-10 for additional information with respect to the compensation we will pay the placement agent.
- (2) The amount of the offering proceeds to us presented in this table does not give effect to any exercise of the Warrants being issued in this offering.

We expect that delivery of the shares of common stock being offered pursuant to this prospectus supplement and the accompanying prospectus will be made on or about July 21, 2020.

H.C. Wainwright & Co.

The date of this prospectus supplement is July 17, 2020.

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About this Prospectus Supplement

This prospectus supplement and the accompanying prospectus dated January 5, 2018, are part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. This prospectus supplement and the accompanying prospectus relate to the offer by us of shares of our common stock to certain investors. We provide information to you about this offering of shares of our common stock in two separate documents that are bound together: (1) this prospectus supplement, which describes the specific details regarding this offering; and (2) the accompanying prospectus, which provides general information, some of which may not apply to this offering. Generally, when we refer to this “prospectus,” we are referring to both documents combined. If information in this prospectus supplement is inconsistent with the accompanying prospectus, you should rely on this prospectus supplement. However, if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus supplement or the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates. You should read this prospectus supplement, the accompanying prospectus, the documents and information incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering when making your investment decision. You should also read and consider the information in the documents we have referred you to under the headings “Where You Can Find More Information; Information Incorporated by Reference.”

You should rely only on information contained in or incorporated by reference into this prospectus supplement and the accompanying prospectus. We have not, and the placement agent has not, authorized anyone to provide you with information that is different. We are offering to sell and seeking offers to buy shares of our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus supplement, the accompanying prospectus, the documents and information incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering are accurate only as of their respective dates, regardless of the time of delivery of this prospectus supplement or of any sale of our common stock.

In this prospectus supplement, unless the context otherwise indicates, the terms “Oncternal,” the “Company,” “we,” “our” and “us” or similar terms refer to Oncternal Therapeutics, Inc., including its consolidated subsidiaries.

We use our registered trademarks, Oncternal and the Oncternal logo in this prospectus. All other trademarks, trade names and service marks appearing in this prospectus or the documents incorporated by reference herein are the property of their respective owners. Use or display by us of other parties’ trademarks, trade dress or products is not intended to and does not imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owner. Solely for convenience, trademarks and tradenames referred to in this prospectus appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or that the applicable owner will not assert its rights, to these trademarks and tradenames.

Cautionary Note Regarding Forward-Looking Statements

This prospectus supplement and the accompanying prospectus, including the documents incorporated by reference herein and therein, and any free writing prospectus that we have authorized for use in connection with this offering contain forward-looking statements. All statements other than statements of historical facts contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein are forward-looking statements, including, without limitation, statements regarding:

- our ability to obtain and maintain regulatory approvals for our product candidates, including cirmtuzumab, TK216 and our ROR1-targeted CAR-T therapy candidate;
- the expected timing for achieving key milestones, including commencing, completing and announcing results of clinical trials of our product candidates;
- the timing or likelihood of regulatory filings and approvals;
- the estimated size of the patient population and anticipated market potential for our product candidates;
- our ability to obtain and maintain favorable regulatory designations for the Company's product candidates and preclinical programs;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates and our ability to operate our business without infringing upon the intellectual property rights of others;
- the plans and objectives of management for future operations and future results of anticipated products;
- 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 intended use of the net proceeds of the offering.

These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein also contain estimates and other statistical data made by independent parties and by us relating to market size and growth and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the markets in which we operate are necessarily subject to a high degree of uncertainty and risk.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “expect,” “plan,” “anticipate,” “could,” “intend,” “target,” “project,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this prospectus supplement and are subject to a number of risks, uncertainties and assumptions, which we discuss in greater detail in the documents incorporated by reference herein, including under the heading “Risk Factors.” The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Moreover, we operate in an evolving environment. New risk factors and uncertainties may emerge from time to time, and it is not possible for management to predict all risk factors and uncertainties. Given these risks and uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained in this prospectus supplement, the accompanying prospectus or the documents incorporated by reference herein, whether as a result of any new information, future events, changed circumstances or otherwise. For all forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

Prospectus Supplement Summary

The items in the following summary are described in more detail later in this prospectus supplement and in the accompanying prospectus. This summary provides an overview of selected information and does not contain all the information you should consider before investing in our common stock. Therefore, you should read the entire prospectus supplement, the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering carefully, including the “Risk Factors” section, and other documents or information included or incorporated by reference in this prospectus supplement and the accompanying prospectus before making any investment decision.

Oncternal Therapeutics, Inc.

We are a clinical-stage biopharmaceutical company focused on the development of novel oncology therapies for cancers with critical unmet medical need. Our development efforts are focused on promising, yet untapped, biological pathways implicated in cancer generation or progression. Our pipeline includes cirmtuzumab, an investigational monoclonal antibody that is designed to inhibit Receptor tyrosine kinase-like Orphan Receptor 1, or ROR1, a growth factor receptor that is widely expressed on many tumors and that activates pathways leading to increased tumor proliferation, invasiveness and drug resistance. Cirmtuzumab is being evaluated in a Phase 1/2 clinical trial in combination with ibrutinib (Imbruvica®) for the treatment of patients with B-cell lymphoid malignancies, including mantle cell lymphoma, or MCL, and chronic lymphocytic leukemia, or CLL, and in an investigator-sponsored, Phase 1b clinical trial in combination with paclitaxel for the treatment of women with HER2-negative metastatic or locally advanced, unresectable breast cancer. We are also developing TK216, an investigational small molecule that is designed to inhibit the ETS, or E26 Transformation Specific, family of oncoproteins, which have been shown in preclinical studies to alter gene transcription and RNA processing and lead to increased cell proliferation and invasion. TK216 is being evaluated in a Phase 1 clinical trial as a single agent and in combination with vincristine in patients with relapsed or refractory Ewing sarcoma, a rare pediatric cancer. In addition, we are developing a chimeric antigen receptor T cell, or CAR-T, therapy candidate that targets ROR1, which is currently in preclinical development as a potential treatment for hematologic cancers and solid tumors.

Cirmtuzumab is an investigational, humanized, potentially first-in-class, anti-ROR1 monoclonal antibody that is designed to bind to a specific functionally important epitope of ROR1, which is a protein expressed on many tumors. ROR1 is a potentially attractive target for cancer therapy because it is an onco-embryonic antigen, which is a protein typically expressed only during embryogenesis that may confer a survival and fitness advantage when reactivated and expressed by tumor cells. ROR1 overexpression in various tumor types, including MCL, CLL and breast cancer, has been associated with more aggressive disease, resistance to therapy and shorter progression-free and overall survival. In preclinical models, inhibition of ROR1 has shown anti-tumor activity, and we believe may have additive or synergistic effects when combined with either targeted therapy or chemotherapy. Preclinical data indicated that when cirmtuzumab bound to ROR1, it blocked growth factor Wnt5a signaling, inhibited tumor cell proliferation, migration and survival, and induced differentiation of CLL tumor cells. Cirmtuzumab was developed in the laboratory of one of our scientific advisors, Professor Thomas Kipps, M.D., Ph.D., Professor of Medicine and Evelyn and Edwin Tasch Chair in Cancer Research at the University of California San Diego, or UC San Diego, with support from the California Institute for Regenerative Medicine, or CIRM. We have an exclusive license to cirmtuzumab for therapeutic uses from UC San Diego.

We have completed a Phase 1 study of single-agent cirmtuzumab in patients with CLL and have completed enrollment of dose-finding and expansion cohorts of a Phase 1/2 clinical study of cirmtuzumab in combination with ibrutinib in patients with CLL, as well as a dose-finding cohort of cirmtuzumab in combination with ibrutinib in patients with MCL. We are currently enrolling in a Phase 1/2 clinical trial of cirmtuzumab in combination with ibrutinib in patients with MCL and plan to increase the number of patients with relapsed/refractory MCL to be enrolled in the Phase 2 expansion cohort to at least 20 patients and to allow enrollment of

patients with a broader range of prior Bruton's tyrosine kinase inhibitor treatments. We recently announced that based on the interim results from our clinical trials in patients MCL and CLL, we will limit total enrollment of patients in the randomized Phase 2 CLL cohort to approximately 35 patients, in order to focus resources on the MCL portion of the study. Cirmtuzumab is also being evaluated in an investigator-sponsored, Phase 1b clinical trial in combination with paclitaxel in patients with HER2 negative breast cancer. In addition, based on the high levels of ROR1 expression in multiple tumors and the importance of ROR1 for tumor proliferation and metastases, we believe that cirmtuzumab has potential as a therapeutic agent in other solid tumors and hematologic malignancies with high unmet medical need.

On June 30, 2020, we announced that the FDA has granted us orphan drug designations of cirmtuzumab for treatment of MCL and for treatment of CLL/small lymphocytic lymphoma.

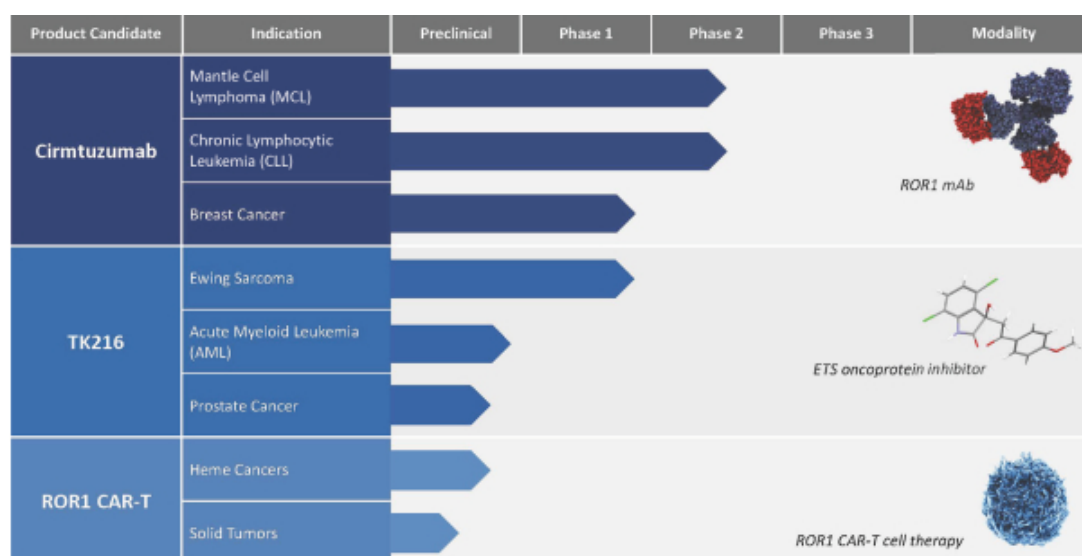
TK216 is an investigational, potentially first-in-class, targeted small molecule that is designed to specifically inhibit the biological activity of the ETS family of oncoproteins. Tumorigenic gene fusions involving ETS factors are frequently found in tumors such as Ewing sarcoma and prostate cancer, and ETS factors are often overexpressed in other tumors, such as acute myeloid leukemia, or AML, and diffuse large B cell lymphoma, or DLBCL. Researchers in the laboratory of Professor Jeffrey Toretsky, M.D., at Georgetown Lombardi Comprehensive Cancer Center, identified the precursor to TK216 using a novel chemical screening assay they developed based on a deep understanding of the underlying biological mechanism of ETS factors. Following this early work, TK216, which is designed to be a specific inhibitor of ETS factors, was created by us through the rational design and screening of novel small molecule inhibitors of a critical protein-protein interaction. In preclinical models, TK216 inhibited the interaction between ETS family members and RNA helicase A, or RHA, and by doing so, shut down excessive cell proliferation. We own intellectual property related to TK216 and have an exclusive license to product candidates targeting ETS oncoproteins for therapeutic, diagnostic or research tool purposes from Georgetown University.

We are evaluating TK216, as a single agent and in combination with vincristine, in a Phase 1 clinical trial in patients with relapsed/refractory Ewing sarcoma. The dose-finding portion of the study was completed in 2019, and we are enrolling patients in an expansion cohort to evaluate the clinical response of treatment with TK216 in combination with vincristine using the recommended Phase 2 dosing regimen. Ewing sarcoma is a rare pediatric cancer that has historically been very challenging to treat effectively, particularly for recurrent and metastatic disease. ETS fusion proteins have been shown to be present in over 90% of Ewing sarcoma cases. TK216 has received an Orphan Drug Designation and Fast Track Designation from the U.S. Food and Drug Administration, or FDA, for the treatment of patients with relapsed or refractory Ewing sarcoma.

We are also developing a ROR1-targeted CAR-T therapy based on the binding domain of cirmtuzumab as a single-chain fragment variable, or scFv, as a potential treatment for patients with aggressive hematological malignancies or solid tumors. Because the epitope of ROR1 recognized by cirmtuzumab has appeared to be restricted to tumor cells in preclinical studies, we believe that a cirmtuzumab-based CAR-T may be selective in distinguishing cancer from normal tissues. Our ROR1-targeted CAR-T therapy candidate is in preclinical development in collaboration with UC San Diego, supported by funding from CIRM, and with Shanghai Pharmaceuticals Holding Co., Ltd., or SPH, in China.

Pipeline

The following figure summarizes our current programs:



Corporate Information

We were incorporated under the name Genotherapeutics, Inc. in Tennessee in September 1997. We changed our name to GTx, Inc. in 2001 and reincorporated in Delaware in 2003. On March 6, 2019, we, then operating as GTx, Inc., entered into an Agreement and Plan of Merger and Reorganization, as amended (the “Merger Agreement”), with privately-held Oncernal Therapeutics, Inc. (“Private Oncernal”) and Grizzly Merger Sub, Inc., our wholly-owned subsidiary (“Merger Sub”). Under the Merger Agreement, Merger Sub merged with and into Private Oncernal, with Private Oncernal surviving as our wholly-owned subsidiary (the “Merger”). On June 7, 2019, the Merger was completed and GTx, Inc. changed its name to Oncernal Therapeutics, Inc. Private Oncernal, which remains as our wholly-owned subsidiary, changed its name to Oncernal Oncology, Inc. On June 10, 2019, the combined company’s common stock began trading on The Nasdaq Capital Market under the ticker symbol “ONCT.”

Our principal executive offices are located at 12230 El Camino Real, Suite 300, San Diego, CA 92130, and our telephone number is (858) 434-1113. Our website address is www.oncernal.com. The information on, or accessible through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus and should not be considered part of this prospectus supplement or the accompanying prospectus.

The Offering

Common stock offered by us	2,581,867 shares of common stock.
Offering price	\$2.3825
Common stock to be outstanding immediately after this offering	17,974,244 shares
Use of proceeds	We intend to use the net proceeds from this offering for general corporate purposes, including expenses related to the clinical development and further preclinical development of cirmtuzumab and TK216, preclinical development of our ROR1 CAR-T program, and for working capital. See “Use of Proceeds.”
Nasdaq Capital Market listing	Our common stock is listed on the Nasdaq Capital Market under the symbol “ONCT.”
Risk factors	You should read the “Risk Factors” section of this prospectus supplement and in the documents incorporated by reference in this prospectus supplement for a discussion of factors to consider before deciding to invest in our common stock.
Concurrent private placement	In a concurrent private placement, we are selling to the purchasers of shares of our common stock in this offering warrants to purchase up to 1,290,933 shares of our common stock, which represent 50% of the number of shares of common stock purchased in this offering. We will receive gross proceeds from the concurrent private placement transaction solely to the extent such warrants are exercised for cash. The warrants will be exercisable immediately upon issuance at an exercise price of \$2.32 per share and will expire five and one-half years from the date on which first exercisable. The warrants and the shares of our common stock issuable upon the exercise of the warrants are not being offered pursuant to this prospectus supplement and the accompanying prospectus and are being offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. See “Private Placement of Warrants” on page S-8.
The number of shares of common stock to be outstanding after this offering is based on 15,392,377 shares outstanding as of March 31, 2020, and excludes as of that date:	
<ul style="list-style-type: none">• 841,424 shares of common stock issuable upon the exercise of outstanding warrants with a weighted average exercise price of \$37.98 per share;• 2,168,206 shares of common stock issuable upon the exercise of outstanding stock options with a weighted average exercise price of \$11.26 per share;• 1,041,413 shares of common stock reserved for future issuance under our 2019 Incentive Award Plan;• 1,290,933 shares of common stock issuable upon exercise of warrants to be issued in a private placement with an exercise price of \$2.32 per share, as described in “Private Placement of Warrants”; and	

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- 154,912 shares of common stock issuable upon exercise of warrants to be issued to the placement agent with an exercise price of \$2.9781 per share, as described in “Plan of Distribution.”

In addition, the number of shares of our common stock to be outstanding after this offering excludes the following securities issued subsequent to March 31, 2020:

- 1,943,636 shares of common stock at a price per share of \$2.5725 issued on May 21, 2020;
- 971,818 shares of common stock issuable upon exercise of warrants issued on May 21, 2020 with an exercise price of \$2.51 per shares; and
- 116,618 shares of common stock issuable upon exercise of warrants issued on May 21, 2020 to the placement agent with an exercise price of \$3.2156 per share.

Unless otherwise indicated, all information contained in this prospectus supplement assumes no exercise of the Warrants or the placement agent warrants to be issued to the placement agent as compensation in connection with this offering.

Risk Factors

You should consider carefully the risks described below and discussed under the section captioned “Risk Factors” contained in our annual report on Form 10-K for the year ended December 31, 2019, as supplemented by our subsequent Quarterly Reports on Form 10-Q as filed under the Securities Exchange Act of 1934, as amended, or the Exchange Act, which are incorporated by reference in this prospectus supplement and the accompanying prospectus in their entirety, together with other information in this prospectus supplement, the accompanying prospectus and the information and documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering before you make a decision to invest in our common stock. If any of the following events actually occur, our business, operating results, prospects or financial condition could be materially and adversely affected. This could cause the trading price of our common stock to decline and you may lose all or part of your investment. The risks described below are not the only ones that we face. Additional risks not presently known to us or that we currently deem immaterial may also affect our business operations.

Risks Relating to This Offering

If you purchase shares of our common stock sold in this offering, you will experience immediate and substantial dilution in the net tangible book value of your shares. In addition, we may issue additional equity or convertible debt securities in the future, which may result in additional dilution to investors.

The offering price per share of common stock in this offering exceeds the net tangible book value per share of our outstanding common stock. As a result, investors purchasing shares of common stock in this offering may experience immediate and substantial dilution in the net tangible book value of the shares they purchase. For a more detailed discussion of the foregoing, see the section entitled “Dilution” below. To the extent outstanding stock options or warrants are exercised, there will be further dilution to new investors. In addition, to the extent we need to raise additional capital in the future and we issue additional equity or convertible debt securities, our then existing stockholders may experience dilution and the new securities may have rights senior to those of our common stock offered in this offering.

Our management team may invest or spend the proceeds of this offering in ways with which you may not agree or in ways which may not yield a significant return.

Our management will have broad discretion over the use of proceeds from this offering. We intend to use the net proceeds from this offering for general corporate purposes, including expenses related to the clinical development and further preclinical development of cirmtuzumab and TK216, preclinical development of our ROR1 CAR-T program, and for working capital. Our management will have considerable discretion in the application of the net proceeds, and you will not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. The net proceeds may be used for corporate purposes that do not increase our operating results or enhance the value of our common stock.

Use of Proceeds

We estimate that the net proceeds to us from this offering will be approximately \$5.7 million assuming all offered shares are sold, after deducting placement agent fees and estimated offering expenses payable by us. We will not receive any proceeds from the concurrent private placement of the Warrants unless such warrants are exercised for cash.

We intend to use the net proceeds from this offering for general corporate purposes, including expenses related to the clinical development and further preclinical development of cirmtuzumab and TK216, preclinical development of our ROR1 CAR-T program, and for working capital.

The amounts and timing of our actual expenditures will depend on numerous factors, including interactions with and feedback from regulatory authorities, the timing of initiation and progress of our clinical trials and results of such trials, other development efforts for our product candidates, and other factors, as well as the amount of cash used in our operations. We therefore cannot estimate with certainty the amount of net proceeds to be used for the purposes described above. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds. Pending the uses described above, we plan to invest the net proceeds from this offering in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

Private Placement of Warrants

Concurrently with the closing of the sale of shares of common stock in this offering, we also expect to issue and sell to the investors the Warrants to purchase up to an aggregate of 1,290,933 shares of our common stock, at an initial exercise price equal to \$2.32 per share.

Each Warrant shall be exercisable immediately upon issuance date and have a term of exercise equal to five and one-half (5.5) years from the date of issuance. Subject to limited exceptions, a holder of Warrants will not have the right to exercise any portion of its warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99%, 9.99% or 19.99% at the investor's election, of the number of shares of our common stock outstanding immediately after giving effect to such exercise, provided that the holder may increase or decrease the beneficial ownership limitation up to 19.99%, provided, further, that any increase in the beneficial ownership limitation shall not be effective until 61 days following notice of such change to the Company.

There is no established public trading market for the Warrants and we do not expect a market to develop. In addition, we do not intend to list the Warrants on the Nasdaq Capital Market, any other national securities exchange or any other nationally recognized trading system.

The Warrants will be issued and sold without registration under the Securities Act, or state securities laws, in reliance on the exemptions provided by Section 4(a)(2) of the Act and/or Regulation D promulgated thereunder and in reliance on similar exemptions under applicable state laws. Accordingly, the investors may exercise those Warrants and sell the underlying shares only pursuant to an effective registration statement under the Securities Act covering the resale of those shares, an exemption under Rule 144 under the Securities Act, or another applicable exemption under the Securities Act.

Dilution

If you invest in our common stock in this offering, your interest will be diluted to the extent of the difference between the offering price per share and the net tangible book value per share of our common stock after this offering, assuming no value is attributing to the Warrants issued in the concurrent private placement. As of March 31, 2020, our net tangible book value was \$10.4 million, or \$0.68 per share, based on 15,392,377 shares of our common stock outstanding as of March 31, 2020. Our net tangible book value per share represents the amount of our total tangible assets reduced by the amount of our total liabilities, divided by the total number of shares of our common stock outstanding as of March 31, 2020. Our pro forma net tangible book value as of March 31, 2020, was approximately \$14.7 million, or \$0.85 per share, after giving effect to our sale on May 21, 2020 of 1,943,636 shares of common stock at an offering price of \$2.5725 per share, after deducting placement agent fees and estimated offering expenses payable by us. After giving further effect to our sale in this offering of 2,581,867 shares of common stock at an offering price of \$2.3825 per share, after deducting placement agent fees and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of March 31, 2020 would have been \$20.4 million, or \$1.02 per share. This represents an immediate increase of net tangible book value of \$0.17 per share to our existing stockholders and an immediate dilution of \$1.36 per share to new investors purchasing securities in this offering. The following table illustrates this per share dilution.

Offering price per share	\$2.38
Net tangible book value per share at March 31, 2020	\$0.68
Pro forma increase in net tangible book value per share attributable to pro forma adjustments for the May 21, 2020 offering described above	0.17
Pro forma net tangible book value per share at March 31, 2020, before giving effect to this offering	0.85
Increase per share attributable to investors purchasing shares in this offering	0.17
Pro forma as adjusted net tangible book value per share after giving effect to this offering	1.02
Dilution to investors purchasing our common stock in this offering	<u>\$1.36</u>

The above discussion and table are based on 15,392,377 shares outstanding as of March 31, 2020, and excludes as of that date:

- 841,424 shares of common stock issuable upon the exercise of outstanding warrants with a weighted average exercise price of \$37.98 per share;
- 2,168,206 shares of common stock issuable upon the exercise of outstanding stock options with a weighted average exercise price of \$11.26 per share;
- 1,041,413 shares of common stock reserved for future issuance under our 2019 Incentive Award Plan;
- 1,290,933 shares of common stock issuable upon exercise of warrants to be issued in a private placement with an exercise price of \$2.32 per share, as described in “Private Placement of Warrants”; and
- 154,912 shares of common stock issuable upon exercise of warrants to be issued to the placement agent with an exercise price of \$2.9781 per share, as described in “Plan of Distribution.”

In addition, the above discussion and table exclude the following securities issued subsequent to March 31, 2020:

- 971,818 shares of common stock issuable upon exercise of warrants issued on May 21, 2020 with an exercise price of \$2.51 per shares; and
- 116,618 shares of common stock issuable upon exercise of warrants issued on May 21, 2020 to the placement agent with an exercise price of \$3.2156 per share.

To the extent that outstanding options or warrants are exercised, you may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital by issuing equity or convertible debt securities, your ownership will be further diluted.

Plan of Distribution

We engaged H.C. Wainwright & Co., LLC, Wainwright or the placement agent, to act as our exclusive placement agent to solicit offers to purchase the shares of our common stock offered by this prospectus supplement and the accompanying base prospectus. The placement agent is not purchasing or selling any such shares, nor is it required to arrange for the purchase and sale of any specific number or dollar amount of such shares, other than to use its “reasonable best efforts” to arrange for the sale of such shares by us. Therefore, we may not sell all of the shares of our common stock being offered. The terms of this offering were subject to market conditions and negotiations between us, the placement agent and prospective investors. The placement agent will have no authority to bind us by virtue of the engagement letter. We have entered into securities purchase agreements directly with certain institutional and accredited investors who have agreed to purchase shares of our common stock in this offering. We will only sell to investors who have entered into securities purchase agreements.

Delivery of the shares of common stock offered hereby is expected to take place on or about July 21, 2020, subject to satisfaction of certain closing conditions.

We have agreed to pay the placement agent: (i) a cash fee equal to 7.0% of the aggregate gross proceeds of this offering (other than in connection with 1,101,289 shares of our common stock sold to certain of our affiliates), (ii) a management fee equal to 1.0% of the gross proceeds raised in this offering, (iii) a non-accountable expense allowance of \$60,000, and (iv) \$12,900 for the clearing expenses of the placement agent in connection with this offering.

We estimate the total expenses of this offering paid or payable by us will be approximately \$0.5 million. After deducting the fees due to the placement agent and our expenses in connection with this offering, we expect the net proceeds from this offering will be approximately \$5.7 million.

Placement Agent Warrants

In addition, we have agreed to issue to the placement agent, at the closing of this offering, warrants to purchase 6.0% of the number of shares of our common stock sold in this offering (or warrants to purchase up to 154,912 shares of our common stock). Such warrants will have substantially the same terms as the warrants being sold and issued in the private placement, except that the placement agent’s warrants will have a term of exercise equal to five (5) years from the date of the purchase agreement and will have an exercise price equal to 125% of the offering price per share (or \$2.9781 per share). Neither the placement agent’s warrants nor the shares of our common stock issuable upon exercise thereof are being registered hereby. Pursuant to Rule 5110(g) of the Financial Industry Regulatory Authority, or FINRA, the placement agent’s warrants and any shares issued upon exercise thereof will not be sold, transferred, assigned, pledged or hypothecated, or be the subject of any hedging, short sale, derivative, put or call transaction that would result in the effective economic disposition of the securities by any person, for a period of 180 days immediately following the date of effectiveness or commencement of sales in this offering, except: (i) the transfer of any security by operation of law or by reason of our reorganization; (ii) the transfer of any security to any FINRA member firm participating in the offering and the officers or partners thereof, if all securities so transferred remain subject to the lock-up restriction set forth above for the remainder of the time period; (iii) the transfer of any security if the aggregate amount of our securities held by the placement agent or related persons do not exceed 1% of the securities being offered; (iv) the transfer of any security that is beneficially owned on a pro-rata basis by all equity owners of an investment fund, provided that no participating member manages or otherwise directs investments by the fund and the participating members in the aggregate do not own more than 10% of the equity in the fund; or (v) the exercise or conversion of any security, if all securities remain subject to the lock-up restriction set forth above for the remainder of the time period.

Indemnification

We have agreed to indemnify the placement agent against certain liabilities, including liabilities under the Securities Act and liabilities arising from breaches of representations and warranties contained in our engagement letter with the placement agent. We have also agreed to contribute to payments the placement agent may be required to make in respect of such liabilities.

In addition, we will indemnify the purchaser of shares of our common stock in this offering against liabilities arising out of or relating to (i) any breach of any of the representations, warranties, covenants or agreements made by us in the securities purchase agreement or related documents or (ii) any action instituted against a purchaser by a third party (other than a third party who is affiliated with such purchaser) with respect to the securities purchase agreement or related documents and the transactions contemplated thereby, subject to certain exceptions.

Right of First Refusal

We have also granted Wainwright, subject to certain exceptions, a right of first refusal for a period of ten (10) months following the closing of this offering to act as sole book-running manager, sole underwriter or sole placement agent for each and every future debt financing or refinancing and public or private equity offering by us or any of our subsidiaries.

Other Relationships

From time to time, Wainwright may provide in the future various advisory, investment and commercial banking and other services to us in the ordinary course of business, for which they have received and may continue to receive customary fees and commissions. Wainwright acted as our exclusive placement agent in connection with our registered direct offering consummated in May 2020, for which it received compensation. However, except as disclosed in this prospectus supplement, we have no present arrangements with Wainwright for any further services.

Regulation M Compliance

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act, and any commissions received by it and any profit realized on the sale of our shares of common stock offered hereby by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. The placement agent will be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the placement agent. Under these rules and regulations, the placement agent may not (i) engage in any stabilization activity in connection with our securities; and (ii) bid for or purchase any of our securities or attempt to induce any person to purchase any of our securities, other than as permitted under the Exchange Act, until they have completed their participation in the distribution.

Trading Market

Our common stock is listed on the Nasdaq Capital Market under the symbol "ONCT."

Legal Matters

The validity of the issuance of the securities offered hereby will be passed upon by our counsel, Latham & Watkins LLP, San Diego, California.

Experts

The consolidated financial statements of Oncternal Therapeutics, Inc. as of December 31, 2019 and 2018 and for the years then ended and management's assessment of the effectiveness of internal control over financial reporting as of December 31, 2019, incorporated by reference in this prospectus supplement have been so incorporated in reliance on the reports of BDO USA, LLP, an independent registered public accounting firm (the report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern), incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

Where You Can Find More Information; Information Incorporated By Reference

Available Information

We have filed with the SEC a registration statement on Form S-3 under the Securities Act, of which this prospectus supplement forms a part. The rules and regulations of the SEC allow us to omit from this prospectus supplement and the accompanying prospectus certain information included in the registration statement. For further information about us and the securities we are offering under this prospectus supplement, you should refer to the registration statement and the exhibits and schedules filed with the registration statement. With respect to the statements contained in this prospectus supplement and the accompanying prospectus regarding the contents of any agreement or any other document, in each instance, the statement is qualified in all respects by the complete text of the agreement or document, a copy of which has been filed as an exhibit to the registration statement.

We file reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information about issuers, such as us, who file electronically with the SEC. The address of that website is <http://www.sec.gov>.

Our website address is www.oncternal.com. The information on, or accessible through, our website is not part of, and is not incorporated into, this prospectus supplement or the accompanying prospectus and should not be considered part of this prospectus supplement or the accompanying prospectus.

Incorporation By Reference

The SEC's rules allow us to "incorporate by reference" information into this prospectus supplement, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this prospectus supplement and the accompanying prospectus, and subsequent information that we file with the SEC will automatically update and supersede that information. Any statement contained in a previously filed document incorporated by reference will be deemed to be modified or superseded for purposes of this prospectus supplement and accompanying prospectus to the extent that a statement contained in this prospectus supplement or the accompanying prospectus modifies or replaces that statement.

We incorporate by reference our documents listed below and any future filings made by us with the SEC under Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, which we refer to as the "Exchange Act" in this prospectus supplement, between the date of this prospectus supplement and the termination of the offering of the securities described in this prospectus supplement. We are not, however, incorporating by reference any documents or portions thereof, whether specifically listed below or filed in the

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future, that are not deemed “filed” with the SEC, including our Compensation Committee report and performance graph or any information furnished pursuant to Items 2.02 or 7.01 of Form 8-K or related exhibits furnished pursuant to Item 9.01 of Form 8-K.

This prospectus supplement and the accompanying prospectus incorporate by reference the documents set forth below that have previously been filed with the SEC:

- our Annual Report on [Form 10-K](#) for the year ended December 31, 2019, filed with the SEC on March 16, 2020;
- our Quarterly Report on [Form 10-Q](#) for the quarter ended March 31, 2020, filed with the SEC on May 7, 2020;
- the information specifically incorporated by reference into our Annual Report on Form 10-K from our Definitive Proxy Statement on [Schedule 14A](#), filed with the SEC on April 29, 2020; and
- our Current Reports on Form 8-K filed with the SEC on [March 18, 2020](#), [April 2, 2020](#), [May 19, 2020](#), [May 21, 2020](#), [June 15, 2020](#) and [June 30, 2020](#); and
- the description of our Common Stock contained in our registration statement on [Form 8-A](#), filed with the SEC on January 13, 2004 and any amendment or report filed with the SEC for the purpose of updating the description.

All reports and other documents we subsequently file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of this offering, including, but excluding any information furnished to, rather than filed with, the SEC, will also be incorporated by reference into this prospectus supplement and the accompanying prospectus and deemed to be part of this prospectus supplement and the accompanying prospectus from the date of the filing of such reports and documents.

You may request a free copy of any of the documents incorporated by reference in this prospectus supplement and the accompanying prospectus (other than exhibits, unless they are specifically incorporated by reference in the documents) by writing or telephoning us at the following address:

Oncternal Therapeutics, Inc.
Attn: Corporate Secretary
12230 El Camino Real, Suite 300
San Diego, California 92130
(858) 434-1113

PROSPECTUS



**\$150,000,000
Common Stock
Warrants**

From time to time, we may offer up to \$150,000,000 of shares of our common stock and warrants to purchase our common stock, either individually or in combination. We may also offer common stock upon the exercise of warrants.

We will provide the specific terms of these offerings and securities in one or more supplements to this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings. The prospectus supplement and any related free writing prospectus may also add, update or change information contained in this prospectus. You should carefully read this prospectus, the applicable prospectus supplement and any related free writing prospectus, as well as any documents incorporated by reference, before you buy any of the securities being offered.

Our common stock is listed on The Nasdaq Capital Market under the symbol "GTXI." On December 21, 2017, the last reported sale price of our common stock was \$12.72 per share. The applicable prospectus supplement will contain information, where applicable, as to other listings, if any, on The Nasdaq Capital Market or other securities exchange of the securities covered by the prospectus supplement.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "Risk Factors" contained in the applicable prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering, and under similar headings in the documents that are incorporated by reference into this prospectus.

This prospectus may not be used to consummate a sale of securities unless accompanied by a prospectus supplement.

The securities may be sold directly by us to investors, through agents designated from time to time or to or through agents, underwriters or dealers, on a continuous or delayed basis. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any agents, underwriters or dealers are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such agents, underwriters or dealers and any applicable fees, commissions, discounts and over-allotment options will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

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 January 5, 2018.

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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 a “shelf” registration process. Under this shelf registration statement, we may, from time to time, offer and sell, in one or more offerings, any combination of the securities described in this prospectus for total gross proceeds of up to \$150,000,000. This prospectus provides you with a general description of the securities we may offer.

Each time we offer securities under this prospectus, we will provide a prospectus supplement that will contain more specific information about the terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change any of the information contained in this prospectus or in the documents that we have incorporated by reference into this prospectus. We urge you to read carefully this prospectus, any applicable prospectus supplement and any free writing prospectuses we have authorized for use in connection with a specific offering, together with the information incorporated herein by reference as described under the section entitled “Incorporation by Reference,” before buying any of the securities being offered.

This prospectus may not be used to consummate a sale of securities unless it is accompanied by a prospectus supplement.

You should rely only on the information contained in, or incorporated by reference into, this prospectus and any applicable prospectus supplement, along with the information contained in any free writing prospectuses we have authorized for use in connection with a specific offering. We have not authorized anyone to provide you with different or additional information. This prospectus is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so.

The information appearing in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate only as of the date on the front of the document and that 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, any applicable prospectus supplement or any related free writing prospectus, or any sale of a security. Our business, financial condition, results of operations and prospects may have changed since those dates.

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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, any applicable prospectus supplement or any related free writing prospectus are the property of their respective owners.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the section entitled “Where You Can Find More Information.”

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. 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 Securities We May Offer

We may offer shares of our common stock and warrants to purchase our common stock, either individually or in combination, with a total value of up to \$150,000,000 from time to time under this prospectus, together with any applicable prospectus supplement and any related free writing prospectus, at prices and on terms to be determined by market conditions at the time of any offering. We may also offer common stock upon the exercise of warrants. This prospectus provides you with a general description of the securities we may offer. Each time we offer securities under this prospectus, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities, including the aggregate offering price.

A prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change any of the information contained in this prospectus or in the documents we have incorporated by reference into this prospectus. However, no prospectus supplement or free writing prospectus will offer a security that is not registered and described in this prospectus at the time of the effectiveness of the registration statement of which this prospectus is a part.

We may sell the securities directly to investors or to or through underwriters, dealers or agents. We, and our underwriters, dealers or agents, reserve the right to accept or reject all or part of any proposed purchase of securities. If we do offer securities to or through underwriters, dealers or agents, we will include in the applicable prospectus supplement:

- the names of those underwriters, dealers or agents;
- applicable fees, discounts and commissions to be paid to them;
- details regarding over-allotment options, if any; and

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- the net proceeds to us.

THIS PROSPECTUS MAY NOT BE USED TO CONSUMMATE A SALE OF ANY SECURITIES UNLESS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.

Common Stock. We may issue shares of our common stock from time to time. The holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders. Subject to preferences that may be applicable to any outstanding shares of preferred stock, the holders of common stock are entitled to receive ratably such dividends as may be declared by our board of directors out of legally available funds. Upon our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preferences of any outstanding shares of preferred stock. Holders of common stock have no preemptive rights and no right to convert their common stock into any other securities. There are no redemption or sinking fund provisions applicable to our common stock.

Warrants. We may issue warrants for the purchase of common stock in one or more series. We may issue warrants independently or together with common stock. In this prospectus, we have summarized certain general features of the warrants. We urge you, however, to read the applicable prospectus supplement (and any free writing prospectus that we may authorize to be provided to you) related to the particular series of warrants being offered, as well as the form of warrant and/or the warrant agreement and warrant certificate, as applicable, that contain the terms of the warrants. A form of warrant agreement and warrant certificate containing the terms of the warrants that may be offered has been filed as an exhibit to the registration statement of which this prospectus is a part. We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of warrant and/or the warrant agreement and warrant certificate, as applicable, that describe the terms of the particular series of warrants we are offering, and any supplemental agreements, before the issuance of such warrants.

Warrants may be issued under a warrant agreement that we enter into with a warrant agent. We will indicate the name and address of the warrant agent, if any, in the applicable prospectus supplement relating to a particular series of warrants.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks and uncertainties described under the heading “Risk Factors” contained in the applicable prospectus supplement and any related free writing prospectus, and discussed under the section entitled “Risk Factors” contained in 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, which are incorporated by reference into this prospectus in their entirety, together with other information in this prospectus, the documents incorporated by reference and any free writing prospectus that we may authorize for use in connection with a specific offering. The risks described in these documents are not the only ones we face, but those that we consider to be material. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occurs, our business, financial condition or results of operations could be seriously harmed. This could cause the trading price of our securities to decline, resulting in a loss of all or part of your investment. 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;
- our projected operating and financial performance; and

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- our intended use of the net proceeds from offerings of our securities under this prospectus.

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 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 any applicable prospectus supplement, in any free writing prospectuses we authorize for use in connection with a specific offering, and in 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. 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, any applicable prospectus supplement and any free writing prospectuses we authorize for use in connection with a specific offering, 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

Except as described in any applicable prospectus supplement or in any free writing prospectuses we have authorized for use in connection with a specific offering, we currently anticipate using the net proceeds from the sale of securities under this prospectus, if any, for clinical development and other research and development activities and for working capital and general corporate purposes. As of the date of this prospectus, we cannot specify with certainty all of the particular uses of the proceeds from the sale of the securities under this prospectus. Accordingly, we will retain broad discretion over the use of such proceeds. Pending these uses, we intend to invest the net proceeds in investment-grade, interest-bearing instruments.

DESCRIPTION OF CAPITAL STOCK

General

As of the date of this prospectus, our authorized capital stock consists of 60,000,000 shares of common stock, \$0.001 par value per share, and 5,000,000 shares of preferred stock, \$0.001 par value per share. As of December 15, 2017, there were 21,541,909 shares of our common stock outstanding and no shares of preferred stock outstanding.

On December 5, 2016, we effected a one-for-ten reverse stock split of our outstanding common stock. At the effective time of the reverse stock split, every ten shares of our issued and outstanding common stock was automatically combined and reclassified into one issued and outstanding share of common stock. No fractional shares of our common stock were issued and each holder of our common stock who would otherwise have been entitled to a fraction of a share of our common stock received a cash payment. In addition, as a result of the reverse stock split, proportionate adjustments were made to the per share exercise price and/or the number of shares issuable upon the exercise or vesting of all stock options, restricted stock units and warrants issued by us and outstanding immediately prior to the effective time of the reverse stock split, which resulted in a proportionate decrease in the number of shares of our common stock reserved for issuance upon exercise or vesting of such stock options, restricted stock units and

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warrants, and, in the case of stock options and warrants, a proportionate increase in the exercise price of all such stock options and warrants. The number of shares reserved for issuance under our equity compensation plans immediately prior to the effective time of the reverse stock split was reduced proportionately. All share and per share information included in this prospectus has been retroactively adjusted to give effect to the reverse stock split.

The following summary description of our capital stock is based on the provisions of our certificate of incorporation and bylaws, the applicable provisions of the General Corporation Law of the State of Delaware, or DGCL, and the agreements described below. This information may not be complete in all respects and is qualified entirely by reference to the provisions of our certificate of incorporation and bylaws, the DGCL and such agreements. For information on how to obtain copies of our certificate of incorporation, bylaws and such agreements, which are exhibits to the registration statement of which this prospectus is a part, see the section entitled “Where You Can Find More Information.”

Common Stock

The holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders. The holders of our common stock do not have cumulative voting rights in the election of directors. Subject to preferences that may be applicable to any outstanding shares of preferred stock, the holders of common stock are entitled to receive ratably such dividends as may be declared by our board of directors out of legally available funds. Upon our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preferences of any outstanding shares of preferred stock. Holders of common stock have no preemptive rights and no right to convert their common stock into any other securities. There are no redemption or sinking fund provisions applicable to our common stock.

The rights of the holders of our common stock are subject to, and may be adversely affected by, the rights of holders of shares of any preferred stock that we may designate and issue in the future.

Preferred Stock

Our certificate of incorporation provides that our board of directors has the authority, without further action by the stockholders, to designate and issue up to 5,000,000 shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, and to determine or alter for each such series, such voting powers, full or limited, or no voting powers, and such designation, preferences, and relative, participating, optional, or other rights and such qualifications, limitations, or restrictions thereof, and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deterring or preventing a change in control of GTx or making removal of management more difficult, and may adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock.

Registration Rights

In September 2017, we completed a private placement of immediately separable units comprised of an aggregate of 5,483,320 shares of our common stock and warrants to purchase an aggregate of 3,289,988 shares of our common stock. Pursuant to the terms of the securities purchase agreement we entered into in connection with this private placement, we agreed to file as many registration statements with the SEC as may be necessary to cover the resale of all of the shares of common stock that we issued to, or are issuable upon the exercise of warrants that we issued to, the investors in the private placement, to use our reasonable best efforts to have all such registration statements declared effective as required by and within the timeframes set forth in the securities purchase agreement, and to keep such registration statements effective for up to two years following the closing date of the private placement. In October 2017, we filed a registration statement under the Securities Act registering the resale of all 8,773,308 shares of common stock that we issued to, or are issuable upon the exercise of warrants that we issued to, the investors in the private placement. In the event that any required registration statements are not filed or declared effective within the

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timeframes set forth in the securities purchase agreement, or any such effective registration statements subsequently become unavailable, we would, subject to certain limited exceptions, be required to pay liquidated damages equal to 1.0% of the aggregate unit purchase price under the securities purchase agreement per month for each default (up to a maximum of 10% of such aggregate unit purchase price). In addition, J.R. Hyde, III, a member of our board of directors, and an affiliate of Mr. Hyde's, have rights under a separate registration rights agreement with us to require us to file resale registration statements covering an additional 785,297 shares of our common stock held in the aggregate or to include these shares in registration statements that we may file for ourselves or other stockholders. The foregoing registration rights do not apply or have been waived with respect to the registration statement of which this prospectus is a part, and no shares held by or issuable to the foregoing investors are registered for resale hereunder.

Anti-Takeover Effects of Provisions of Delaware Law and Our Charter Documents

Delaware Takeover Statute. We are subject to Section 203 of the DGCL. Section 203 generally prohibits a public Delaware corporation such as us from engaging in a "business combination" with an "interested stockholder" for a period of three years following the time that the stockholder became an interested stockholder, unless:

- prior to the time the stockholder became an interested stockholder, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (a) shares owned by persons who are directors and also officers and (b) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to the time the stockholder became an interested stockholder, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, lease, exchange, mortgage, pledge, transfer or other disposition (in one transaction or a series of transactions) involving the interested stockholder of 10% or more of the assets of the corporation (or its majority-owned subsidiary);
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- subject to exceptions, any transaction involving the corporation that has the effect, directly or indirectly, of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit, directly or indirectly (except proportionately as a stockholder of such corporation), of any loans, advances, guarantees, pledges or other financial benefits, other than certain benefits set forth in Section 203, provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person that is an affiliate or associate of such entity or person.

Charter Documents. Our certificate of incorporation and bylaws provide that our board of directors be divided into three classes of directors, as nearly equal in number as possible, with each class serving a staggered three-year

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term. The classification system of electing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us since the classification of the board of directors generally increases the difficulty of replacing a majority of directors. In addition, our certificate of incorporation and bylaws:

- provide that any action required or permitted to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and may not be effected by any consent in writing;
- establish advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon at a stockholder meeting;
- provide that the authorized number of directors may be changed only by resolution of the board of directors; and
- provide that special meetings of our stockholders may be called only by the chairman of our board of directors, our chief executive officer or our board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors.

The DGCL provides generally that the affirmative vote of a majority of the shares entitled to vote is required to amend a corporation's bylaws, unless a corporation's certificate of incorporation requires a greater percentage or also confers the power upon the corporation's directors. Our bylaws may be amended or repealed by:

- the affirmative vote of a majority of our directors then in office; or
- the affirmative vote of the holders of at least 66-2/3% of the voting power of all then-outstanding shares of our capital stock entitled to vote generally in the election of directors.

The foregoing provisions of our certificate of incorporation may only be amended or repealed by the affirmative vote of a majority of our directors and the affirmative vote of the holders of at least 66-2/3% of the voting power of all then-outstanding shares of our capital stock entitled to vote generally in the election of directors.

These and other provisions contained in our certificate of incorporation and bylaws could delay or discourage some types of transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares over then current prices, and may limit the ability of stockholders to remove current management or approve transactions that stockholders may deem to be in their best interests and, therefore, could adversely affect the price of our common stock.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A. Its address is 250 Royall Street, Canton, MA 02021.

DESCRIPTION OF WARRANTS

The following description, together with the additional information that we include in any applicable prospectus supplement and in any related free writing prospectus that we may authorize to be distributed to you, summarizes the material terms and provisions of the warrants that we may offer under this prospectus. While the terms we have summarized below will apply generally to any warrants that we may offer under this prospectus, we will describe the particular terms of any series of warrants in more detail in the applicable prospectus supplement. The following description of warrants will apply to the warrants offered under this prospectus unless we provide otherwise in the applicable prospectus supplement. The applicable prospectus supplement for a particular series of warrants may specify different or additional terms.

We have filed a form of warrant agreement and warrant certificate containing the terms of the warrants that may be offered as an exhibit to the registration statement of which this prospectus is a part. We will file as exhibits to the registration statement of which this prospectus is a part, or will incorporate by reference from reports that we file with the SEC, the form of warrant and/or the warrant agreement and warrant certificate, as applicable, that describe the terms of the particular series of warrants we are offering, and any supplemental agreements, before the issuance

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of such warrants. The following summaries of material terms and provisions of the warrants are subject to, and qualified in their entirety by reference to, all the provisions of the form of warrant and/or the warrant agreement and warrant certificate, as applicable, and any supplemental agreements applicable to a particular series of warrants. We urge you to read the applicable prospectus supplement related to the particular series of warrants that we may offer under this prospectus, as well as any related free writing prospectus, and the form of warrant and/or the warrant agreement and warrant certificate, as applicable, and any supplemental agreements, that contain the terms of the warrants.

General

The warrants may be issued independently or together with any common stock. The warrants may be issued under a warrant agreement that we enter into with a warrant agent, all as shall be set forth in a prospectus supplement relating to the particular series of warrants being offered pursuant to this prospectus and such prospectus supplement.

We will describe in the applicable prospectus supplement the terms of the particular series of warrants being offered, including:

- the offering price and aggregate number of warrants offered;
- the currency for which the warrants may be purchased;
- if applicable, the number of warrants issued with each share of common stock;
- the number of shares of common stock purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrants;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of shares of common stock issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire;
- the manner in which the warrants may be modified;
- a discussion of any material or special United States federal income tax consequences of holding or exercising the warrants; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of our common stock, including the right to receive dividends, if any, or payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any. Accordingly, holders of warrants will not be entitled, by virtue of being such holders, to vote, consent, receive dividends, receive notices as stockholders with respect to any meeting of stockholders for the election of our directors or any other matter, or to exercise any rights whatsoever as our stockholders.

Exercise of Warrants

Each warrant will entitle the holder to purchase shares of our common stock at such exercise price as will in each case be set forth in, or be determinable as set forth in, the applicable prospectus supplement relating to the warrants offered thereby. The warrants may be exercised as set forth in the applicable prospectus supplement relating to the warrants offered. Unless we otherwise specify in the applicable prospectus supplement, warrants may be exercised at any time up to the close of business on the expiration date set forth in the prospectus supplement relating to the warrants offered thereby. After the close of business on the expiration date, unexercised warrants will become void.

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Upon receipt of payment and the warrant or warrant certificate, as applicable, properly completed and duly executed at the corporate trust office of the warrant agent, if any, or any other office, including ours, indicated in the prospectus supplement, we will, as soon as practicable, issue and deliver the common stock purchasable upon such exercise. If less than all of the warrants (or the warrants represented by such warrant certificate) are exercised, a new warrant or a new warrant certificate, as applicable, will be issued for the remaining warrants.

Governing Law

Unless we otherwise specify in the applicable prospectus supplement, the warrants will be governed by and construed in accordance with the laws of the State of New York.

Enforceability of Rights by Holders of Warrants

Each warrant agent, if any, will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action its right to exercise, and receive the common stock purchasable upon exercise of, its warrants.

Outstanding Warrants

As of December 15, 2017, we had outstanding warrants to purchase an aggregate of 3,289,988 shares of our common stock having a per share exercise price of \$9.02. These warrants have a five year term expiring on September 29, 2022. As of December 15, 2017, we also had outstanding warrants to purchase an aggregate of 6,430,948 shares of our common stock having a per share exercise price of \$8.50. These warrants have a four year term expiring on May 6, 2019.

PLAN OF DISTRIBUTION

We may sell the securities from time to time pursuant to underwritten public offerings, “at-the-market” offerings, negotiated transactions, block trades or a combination of these methods. We may sell the securities to or through one or more underwriters or dealers (acting as principal or agent), through agents, or directly to one or more purchasers. A prospectus supplement or supplements (and any related free writing prospectus that we may authorize to be provided to you) will describe the terms of the offering of the securities, including, to the extent applicable:

- the name or names of any underwriters, dealers or agents, if any;
- the purchase price of the securities and the proceeds we will receive from the sale;
- any over-allotment or other options under which underwriters may purchase additional securities from us;
- any agency fees or underwriting discounts and other items constituting agents’ or underwriters’ compensation;
- any public offering price;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any securities exchange or market on which the securities may be listed.

Only underwriters named in the prospectus supplement will be underwriters of the securities offered by the prospectus supplement. Dealers and agents participating in the distribution of the securities may be deemed to be underwriters, and compensation received by them on resale of the securities may be deemed to be underwriting discounts. If such dealers or agents were deemed to be underwriters, they may be subject to statutory liabilities under the Securities Act.

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If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price or at varying prices determined at the time of sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all of the securities offered by the prospectus supplement, other than securities covered by any over-allotment option. If a dealer is used in the sale of securities, we or an underwriter will sell the securities to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale. Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may change from time to time. We may use underwriters, dealers or agents with whom we have a material relationship. We will describe in the prospectus supplement, naming the underwriter, the nature of any such relationship.

We may sell securities directly or through agents we designate from time to time, including in “at-the-market” offerings or otherwise. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

We may authorize underwriters, dealers or agents to solicit offers by certain types of institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

We may provide underwriters, dealers and agents with indemnification against civil liabilities, including liabilities under the Securities Act, or contribution with respect to payments that the underwriters, dealers or agents may make with respect to these liabilities. Underwriters, dealers and agents, or their affiliates, may engage in transactions with, or perform services for, us in the ordinary course of business.

Any underwriter may engage in over-allotment, stabilizing transactions, short covering transactions and penalty bids in accordance with Regulation M under the Exchange Act. Over-allotment involves sales in excess of the offering size, which create a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a covering transaction to cover short positions. Those activities may cause the price of the securities to be higher than it would otherwise be. If commenced, the underwriters may discontinue any of the activities at any time.

Any underwriters that are qualified market makers on The Nasdaq Capital Market may engage in passive market making transactions in the securities on The Nasdaq Capital Market in accordance with Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of the securities. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker’s bid, however, the passive market maker’s bid must then be lowered when certain purchase limits are exceeded.

In compliance with guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum consideration or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, the validity of the securities offered by this prospectus, and any supplement thereto, will be passed upon for us by Cooley LLP, San Francisco, California.

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 securities we 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 securities we are offering 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 a website that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC, including GTx. The SEC's website 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, June 30, 2017 and September 30, 2017 filed with the SEC on [May 15, 2017](#), [August 14, 2017](#) and [November 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

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and prior to effectiveness of such registration statement, until we file a post-effective amendment that indicates the termination of the offering of the securities 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.



2,581,867 Shares of Common Stock

PROSPECTUS SUPPLEMENT

H.C. Wainwright & Co.

The date of this prospectus supplement is July 17, 2020
