

---

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

---

Amendment No. 1  
TO  
**FORM S-1**  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933

---

**GT BIOPHARMA, INC.**  
(Exact Name of Registrant as Specified in Its Charter)

---

Delaware  
(State or Other Jurisdiction of  
Incorporation or Organization)

2834  
(Primary Standard Industrial  
Classification Code Number)

94-1620407  
(I.R.S. Employer  
Identification Number)

315 Montgomery Street, 10th Floor  
San Francisco, CA 94104  
(415) 919-4040  
(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

---

Michael Breen  
Interim Chief Executive Officer  
315 Montgomery Street, 10<sup>th</sup> Floor  
San Francisco, CA 94104

(415) 919-4040  
(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent For Service)  
*Copies to:*

---

Roger W. Bivans  
Baker & McKenzie LLP  
1900 N. Pearl Street, Suite 1500  
Dallas, TX 75201, USA  
(214) 978 3000

Charles Phillips  
Ellenoff Grossman & Schole LLP  
1345 Avenue of Americas  
New York, NY  
(212) 370 1300

**Approximate date of commencement of proposed sale to the public:** As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

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

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

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

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

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

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

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

---

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

**SUBJECT TO COMPLETION DATED JANUARY 27, 2025**

**PRELIMINARY PROSPECTUS**

**Up to 3,361,344 Shares of Common Stock  
Pre-Funded Warrants to Purchase up to 3,361,344 Shares of Common Stock  
Common Warrants to Purchase up to 3,361,344 Shares of Common Stock  
Placement Agent Warrants to Purchase up to 201,680 Shares of Common Stock  
Up to 6,924,368 Shares of Common Stock underlying Pre-Funded Warrants,  
Common Warrants and Placement Agent Warrants**



This is a reasonable best efforts public offering of up to 3,361,344 shares (the “shares”) of our common stock, par value \$0.001 per share (“common stock”) together with up to 3,361,344 common warrants to purchase up to 3,361,344 shares of common stock at an assumed combined public offering price of \$2.38 per share and common warrant (the last reported sale price per share of our common stock on the Nasdaq Capital Market, on January 23, 2025). Each share of common stock is being offered together with one common warrant to purchase one share of common stock. The shares of common stock and common warrants will be separately issued. Each common warrant will be immediately exercisable upon issuance with an exercise price of \$ \_\_\_\_\_ per share (100% of the combined public offering price of each share of common stock and accompanying common warrant in this offering) and will expire five years after the issuance date. This prospectus also covers the shares of common stock issuable from time to time upon the exercise of the common warrants. See “*Description of Securities we are Offering – Common Warrants*.”

We are also offering pre-funded warrants to those purchasers, whose purchase of shares of common stock in this offering would result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock following the consummation of this offering in lieu of the shares of our common stock that would result in ownership in excess of 4.99% (or, at the election of the purchaser, 9.99%). Each pre-funded warrant will be exercisable for one share of common stock at an exercise price of \$0.0001 per share. Each pre-funded warrant is being offered together with the same common warrant to purchase one share of common stock described above that is being offered with each share of common stock. The purchase price of each pre-funded warrant will equal the combined public offering price per share of common stock and common warrants being sold in this offering, less the \$0.0001 per share exercise price of each such pre-funded warrant. Each pre-funded warrant will be exercisable upon issuance and will expire when exercised in full. The pre-funded warrants and common warrants will be separately issued. For each pre-funded warrant that we sell, the number of shares of common stock that we are selling will be decreased on a one-for-one basis. This prospectus also covers the shares of common stock issuable from time to time upon the exercise of the pre-funded warrants. See “*Description of Securities we are Offering – Pre-Funded Warrants*.”

We have engaged Roth Capital Partners, LLC, or the placement agent, to act as our exclusive placement agent in connection with this offering. The placement agent has agreed to use its reasonable best efforts to arrange for the sale of the securities offered by this prospectus. The placement agent is not purchasing or selling any of the securities we are offering and the placement agent is not required to arrange the purchase or sale of any specific number or dollar amount of securities. We have agreed to pay to the placement agent the placement agent fees set forth in the table below, which assumes that we sell all of the securities offered by this prospectus. There is no arrangement for funds to be received in escrow, trust or similar arrangement. There is no minimum number of shares of securities or minimum aggregate amount of proceeds that is a condition for this offering to close. We may sell fewer than all of the securities offered hereby, which may significantly reduce the amount of proceeds received by us, and investors in this offering will not receive a refund if we do not sell all of the securities offered hereby. Because there is no escrow account and no minimum number of securities or amount of proceeds, investors could be in a position where they have invested in us, but we have not raised sufficient proceeds in this offering to adequately fund the intended uses of the proceeds as described in this prospectus. We will bear all costs associated with the offering. See “*Plan of Distribution*” on page 36 of this prospectus for more information regarding these arrangements. This offering will terminate no later than February 28, 2025, unless we decide to terminate the offering (which we may do at any time in our discretion) prior to that date. The securities will be offered at a fixed price and are expected to be issued in a single closing. Investors purchasing securities offered hereby will have the option to execute a securities purchase agreement with us. We expect that the closing of the offering will occur one trading day after we price the securities offered hereby. When we price the securities, we will simultaneously enter into securities purchase agreements relating to the offering with those investors who so choose. The offering will settle delivery versus payment (“DVP”)/receipt versus payment (“RVP”). That is, on the closing date, we will issue the shares of common stock directly to the account(s) at the placement agent identified by each purchaser; upon receipt of such shares, the placement agent shall promptly electronically deliver such shares to the applicable purchaser, and payment therefor shall be made by the placement agent (or its clearing firm) by wire transfer to us.

Our common stock is listed on the Nasdaq Capital Market under the symbol “GTBP.” On January 23, 2025, the last reported sale price of our common stock on the Nasdaq Capital Market was \$2.38 per share. All share, common warrant and pre-funded warrant numbers are based on an assumed combined public offering price of \$2.38 per share or pre-funded warrant, as applicable, and common warrants. The actual combined public offering price per share and common warrants and the actual combined public offering price per common warrants and pre-funded warrants will be determined between us and investors based on market conditions at the time of pricing, and may be at a discount to the current market price of our common stock. Therefore, the assumed public offering price used throughout this prospectus may not be indicative of the final public offering price.

You should read this prospectus, together with additional information described under the headings “*Incorporation of Certain Information By Reference*” and “*Where You Can Find More Information*,” carefully before you invest in any of our securities.

Investing in our securities involves a high degree of risk. See the section entitled “*Risk Factors*” beginning on page 9 of this prospectus and in the documents incorporated by reference into this prospectus for a discussion of risks that should be considered in connection with an investment in our securities.

	Per Share and Common Warrant	Per Pre-Funded Warrant and Common Warrant	Total
Public offering price	\$ _____	\$ _____	\$ _____
Placement Agent fees <sup>(1)</sup>	\$ _____	\$ _____	\$ _____

Proceeds to us, before expenses<sup>(2)</sup> \$ \$ \$

(1) Includes a cash fee up to 6% of the gross proceeds raised in this offering; provided, however, the cash fee shall equal 3% of the gross proceeds raised in this offering for securities purchased by certain excluded investors, to be paid to the placement agent. We have also agreed to reimburse the placement agent for certain of its offering-related expenses in an aggregate amount up to \$100,000. In addition, we have agreed to issue the placement agent or its designees warrants to purchase up to 201,680 shares of common stock (equal to 6% of the aggregate number of shares of common stock and pre-funded warrants sold in this offering, subject to a partial adjustment in the event certain investors participate) at an exercise price of \$ per share, which represents 125% of the public offering price per share of common stock and common warrants. We refer to these warrants in this prospectus as the “placement agent warrants.” See “*Plan of Distribution*” for a complete description of the compensation to be received by the placement agent.

(2) Because there is no minimum number of securities or amount of proceeds required as a condition to closing in this offering, the actual public offering amount, placement agent fees, and proceeds to us, if any, are not presently determinable and may be substantially less than the total maximum offering amounts set forth above. We estimate the total expenses of this offering payable by us, excluding the placement agent fee, will be approximately \$390,531.

The delivery of the shares of common stock any pre-funded warrants and common warrants to purchasers is expected to be made no later than , 2025, subject to the satisfaction of customary closing conditions.

**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. Any representation to the contrary is a criminal offense.**

## Roth Capital Partners

The date of this prospectus is , 2025.

### TABLE OF CONTENTS

	Page
<a href="#">ABOUT THIS PROSPECTUS</a>	1
<a href="#">CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS</a>	2
<a href="#">PROSPECTUS SUMMARY</a>	3
<a href="#">THE OFFERING</a>	8
<a href="#">RISK FACTORS</a>	9
<a href="#">USE OF PROCEEDS</a>	15
<a href="#">CAPITALIZATION</a>	15
<a href="#">DILUTION</a>	16
<a href="#">EXECUTIVE COMPENSATION</a>	17
<a href="#">CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS</a>	22
<a href="#">SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT</a>	23
<a href="#">DESCRIPTION OF CAPITAL STOCK</a>	24
<a href="#">DESCRIPTION OF SECURITIES WE ARE OFFERING</a>	27
<a href="#">MATERIAL TAX CONSIDERATIONS</a>	30
<a href="#">PLAN OF DISTRIBUTION</a>	36
<a href="#">INCORPORATION OF CERTAIN INFORMATION BY REFERENCE</a>	39
<a href="#">WHERE YOU CAN FIND MORE INFORMATION</a>	40
<a href="#">LEGAL MATTERS</a>	40
<a href="#">EXPERTS</a>	40

i

### ABOUT THIS PROSPECTUS

We incorporate by reference important information into this prospectus. You may obtain the information incorporated by reference without charge by following the instructions under “*Where You Can Find More Information.*” You should carefully read this prospectus as well as additional information described under “*Incorporation of Certain Information by Reference,*” before deciding to invest in our securities.

We have not, and the placement agent has not, authorized anyone to provide any information or to make any representations other than those contained in this prospectus or in any free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This prospectus is an offer to sell only the securities offered hereby, and only under circumstances and in jurisdictions where it is lawful to do so. The information contained in this prospectus or in any applicable free writing prospectus is current only as of its date, regardless of its time of delivery or any sale of our securities. Our business, financial condition, results of operations and prospects may have changed since that date.

The information incorporated by reference or provided in this prospectus contains statistical data and estimates, including those relating to market size and competitive position of the markets in which we participate, that we obtained from our own internal estimates and research, as well as from industry and general publications and research, surveys and studies conducted by third parties. Industry publications, studies and surveys generally state that they have been obtained from sources believed to be reliable. While we believe our internal company research is reliable and the definitions of our market and industry are appropriate, neither this research nor these definitions have been verified by any independent source.

For investors outside the United States: We have not, and the placement agent has not, done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus outside the United States.

This prospectus and the information incorporated by reference into this prospectus contain references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus and the information incorporated by reference into this prospectus, including logos, artwork, and other visual displays, may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies’ trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other company.

1

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Some of the statements in this prospectus are “forward-looking statements” within the meaning of the safe harbor from liability established by the Private Securities Litigation Reform Act of 1995. Forward-looking statements include statements regarding our current beliefs, goals and expectations about matters such as our expected financial performance and condition, operating results, our business strategy and our financing plans. The forward-looking statements in this prospectus are not based on historical facts, but rather reflect the current expectations of our management concerning future results and events. The forward-looking statements generally can be identified by the use of terms such as “believe,” “expect,” “anticipate,” “intend,” “plan,” “foresee,” “may,” “guidance,” “estimate,” “potential,” “outlook,” “target,” “forecast,” “likely” or other similar words or phrases. Similarly, statements that describe our objectives, plans or goals are, or may be, forward-looking statements.

Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be different from any future results, performance and achievements expressed or implied by these statements. We cannot guarantee that our forward-looking statements will turn out to be correct or that our beliefs and goals will not change. Our actual results could be very different from and worse than our expectations for various reasons. The risk factors and cautionary language discussed in this prospectus provide examples of risks, uncertainties and events that may cause actual results to differ materially from the expectations described by us in such forward-looking statements, including among other things:

- our ability to develop and advance our current product candidates and programs into, and successfully complete, clinical trials;
- our financial condition raises substantial doubt as to our ability to continue as a going concern;
- our financial performance and our ability to effectively manage our anticipated growth;
- the period over which we estimate our existing cash and cash equivalents will be sufficient to fund our future operating expenses and capital expenditure requirements;
- the impact of laws and regulations;
- general economic conditions;
- the effects of the coronavirus and other communicable diseases on the continued or resumed disruption of supply chains, the global economy, on the global financial markets and on our business;
- the timing, scope and likelihood of regulatory filings and approvals;
- our continued reliance on third parties to conduct additional clinical trials of our product candidates;
- our manufacturing, commercialization, and marketing capabilities and strategy;
- our intellectual property position, including the scope of protection we are able to establish and maintain for intellectual property rights covering product candidates we may develop, including the validity of intellectual property rights held by third parties, and our ability not to infringe, misappropriate or otherwise violate any third-party intellectual property rights;
- the rate and degree of market acceptance and clinical utility of our product candidates we may develop;
- our ability to hire additional qualified personnel and attract and retain key employees; and
- the result of any future financing efforts; and
- our failure to maintain compliance with the Nasdaq Capital Market’s (“Nasdaq”) continued listing requirements could result in the delisting of our common stock.

These risks, among others, could cause actual results to differ materially from those implied by the forward-looking statements contained in this prospectus. You should review carefully all information, including the discussion under “Risk Factors” in this prospectus and in the documents incorporated by reference herein. Any forward-looking statements in this prospectus are made only as of the date hereof and, except as may be required by law, we do not have any obligation to publicly update any forward-looking statements contained in this prospectus to reflect subsequent events or circumstances.

You should read this prospectus with the understanding that our actual future results may be materially different from what we expect. We do not assume any obligation to update any forward-looking statements whether as a result of new information, future events or otherwise, except as required by applicable law.

## PROSPECTUS SUMMARY

*This summary highlights information contained elsewhere in this prospectus. This summary does not contain all of the information that you should consider before deciding to invest in our securities. You should read this entire prospectus carefully, including the “Risk Factors” section in this prospectus and under similar captions in the documents incorporated by reference into this prospectus. In this prospectus, unless otherwise stated or the context otherwise requires, references to the terms “GTBP,” “the Company,” “we,” “us” and “our” refer to GT Biopharma, Inc., together with its subsidiaries, unless the context otherwise requires. This prospectus and the information incorporated herein by reference include 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 and the information incorporated herein by reference are the property of their respective owners.*

### Overview

We are a clinical stage biopharmaceutical company focused on the development and commercialization of novel immuno-oncology products based on our proprietary Tri-specific Killer Engager (TriKE<sup>®</sup>), and Tetra-specific Killer Engager (Dual Targeting TriKE<sup>®</sup>) fusion protein immune cell engager technology platforms. Our TriKE<sup>®</sup> and Dual Targeting TriKE<sup>®</sup> platforms generate proprietary therapeutics designed to harness and enhance the cancer killing abilities of a patient’s own natural killer cells, or NK cells. Once bound to an NK cell, our moieties are designed to activate the NK cell to direct it to one or more specifically targeted proteins expressed on a specific type of cancer cell or virus infected cell, resulting in the targeted cell’s death. TriKE<sup>®</sup>s can be designed to target any number of tumor antigens, including B7-H3, HER2, CD33 and PDL1, on hematologic malignancies or solid tumors and do not require patient-specific customization. We believe our TriKE<sup>®</sup> and Dual Targeting TriKE<sup>®</sup> platforms that activate endogenous NK cells are potentially safer than T-cell immunotherapy because there is less cytokine release syndrome (CRS) and fewer neurological complications. Our preclinical data suggests that this is explained by the TriKE<sup>®</sup> dependent CD16 directed IL-15 proliferation of NK cells but little effect endogenous T cells.

We are using our TriKE<sup>®</sup> platform with the intent to bring to market immuno-oncology products that can treat a range of hematologic malignancies, solid tumors, and potentially autoimmune disorders. The platform is scalable, and we are implementing processes to produce investigational new drug (IND) ready moieties in a timely

manner after a specific TriKE® conceptual design. Specific drug candidates can then be advanced into the clinic on our own or through potential collaborations with partnering companies. We believe our TriKE®s may have the ability, if approved for marketing, to be used as both monotherapy and in combination with other standard-of-care therapies.

Our initial work was conducted in collaboration with the Masonic Cancer Center at the University of Minnesota under a program led by Dr. Jeffrey Miller, Professor of Medicine, and the Deputy Director at the Center. Dr. Miller is a recognized key opinion leader in the field of NK cell and IL-15 biology and their therapeutic potential. We have exclusive rights to the TriKE® platform and are generating additional intellectual property for specific moieties.

### Product Pipeline

Our current product candidate pipeline is summarized in the table below

## TriKE® Pipeline



TriKE® Product Candidates	Approach	Target	Indication	Pre-Clinical	IND-Enabling/ GMP Manufacturing	Phase 1	Phase 2
<b>GTB-3650</b> 2 <sup>nd</sup> Generation Camelid	Monotherapy	CD33	Leukemia – AML, MDS			<b>GTB-3650 Phase 1 trial initiated. First patient dosed on 01/21/2025</b>	
	Combination with Chemotherapy	CD33	Leukemia – AML, MDS				
<b>GTB-5550</b>	Monotherapy & Combination	B7H3	Solid Tumors			<b>GTB-5550 IND submission expected H1 2025</b>	
<b>GTB-6550</b>	Monotherapy & Combination	HER2	Solid Tumors				
<b>GTB-7550</b>	Monotherapy & Combination	CD19	B-Cell Malignancies				
<b>GTB-1050</b>	Monotherapy & Combination		HIV				
<b>Undisclosed Candidates</b>	Monotherapy & Combination		Solid & Hematological Malignancies				
<b>GTB-3550</b>	Monotherapy	CD33	Leukemia – AML, MDS				<b>GTB-3550 supplanted by second generation GTB-3650</b>

Clinical Product Candidates

Preclinical Product Candidates

Development abandoned

1

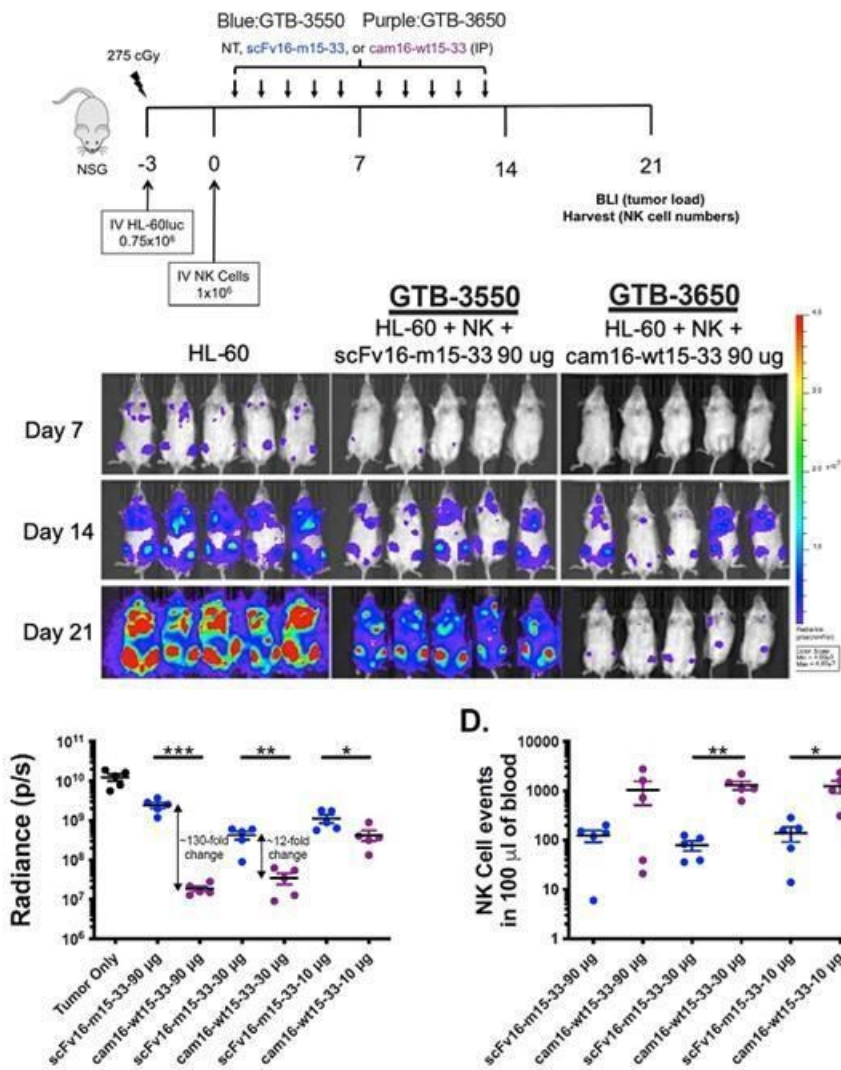
3

### GTB-3550

GTB-3550 was our first TriKE® product candidate and its clinical development was suspended so that we could focus resources on second-generation TriKEs®. GTB-3550 is a tri-specific killer engager (TriKE) comprised of two single-chain variable fragments (“scFv”) composed of the variable regions of the heavy and light chains of anti-CD16 and anti-CD33 antibodies and a modified form of IL-15. We studied this anti-CD16-IL-15-anti-CD33 TriKE® in CD33 positive leukemias, a marker expressed on tumor cells in acute myelogenous leukemia, or AML, and myelodysplastic syndrome, or MDS. The anti-CD33 antibody fragment in GTB-3550 was derived from the M195 humanized anti-CD33 scFv. We believe the approval of the antibody-drug conjugate gemtuzumab validates the targeting of CD33.

We previously announced the interim clinical trial results for GTB-3550, which showed significantly reduced CD 33+ bone marrow blast levels by 33.3%, 61.7%, 63.6%, 50% in Patient 5 (25 µg/kg/day), Patient 7 (50 µg/kg/day), Patient 9 (100 µg/kg/day), and Patient 11 (150 µg/kg/day), respectively. After the end of infusion, GTB-3550 and IL-15 concentrations declined rapidly with overall geometric mean terminal phase elimination half-life (T1/2) of 2.2 and 2.52 hours, respectively. There was minimal CRS resulting from hyperactivation of patient’s T-cell population at doses 5–150 µg/kg/day.

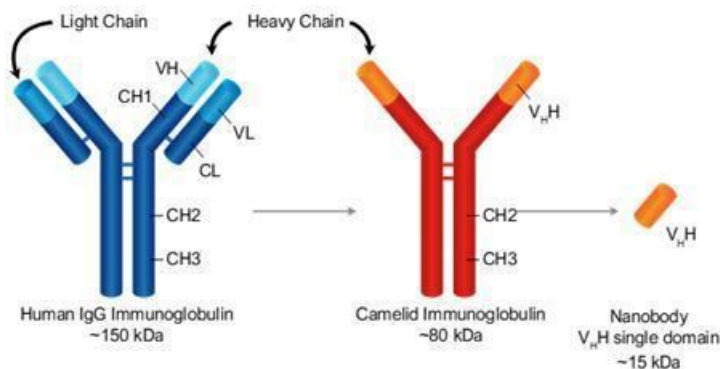
Despite the positive interim clinical trial results, GTB-3550 was replaced by a more potent next-generation camelid nanobody TriKE®, GTB-3650, that similarly targets CD33 on relapsed/refractory AML and high-risk MDS. A key difference between GTB-3550 and GTB-3650 is the incorporation of camelid antibody technology instead of a scFv; our preclinical experience showed markedly enhanced potency of TriKEs® comprised of camelid components. This is illustrated below by better tumor control of AML bearing animals with GTB-3650 (purple dots) compared to GTB-3550 (blue dots). This provided the rationale for pausing further development of GTB-3550 and moving over to solely develop the second-generation, camelid-based TriKE® platform.



### Second Generation TriKE®s Utilize Camelid Nanobody Technology

Our goal is to be a leader in immuno-oncology therapies targeting a broad range of indications including hematological malignancies and solid tumors. A key element of our strategy includes introducing a next-generation camelid nanobody platform. Camelid antibodies (often referred as nanobodies) are smaller than human immunoglobulin, consisting of two heavy chains instead of two heavy and two light chains. These nanobodies have the potential to have greater affinity to target antigens, potentially resulting in greater potency. We are utilizing this camelid antibody structure for all of our new TriKE® product candidates.

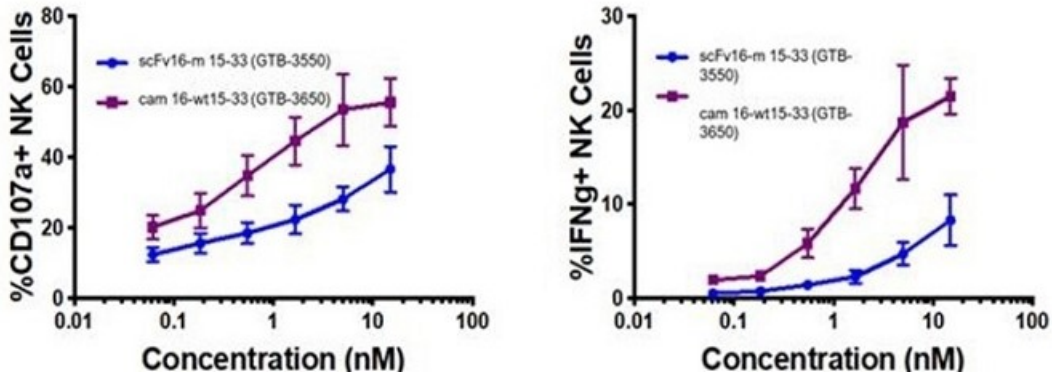
To develop second generation TriKE®, we designed a new humanized CD16 engager derived from a single-domain antibody. While scFvs consist of a heavy and a light variable chain joined by a linker, single-domain antibodies consist of a single variable heavy chain capable of engaging without the need of a light chain counterpart (see figure below).



These single-domain antibodies are thought to have certain attractive features for antibody engineering, including physical stability, ability to bind deep grooves, and increased production yields, amongst others. Pre-clinical studies demonstrated increased NK cell activation against CD33+ targets including enhanced NK cell degranulation (% CD107a+) and IFN $\gamma$  with the single-domain CD16 TriKE® (cam 16-wt15-33; GTB-3650) compared to the original TriKE® (scFv16-m 15-33; GTB-3550) (see figure below). This data was published by Dr. Felices M et al (2020) in Cancer Immunol Res.

**CD33+ HL60 Targets in Killing Assays**

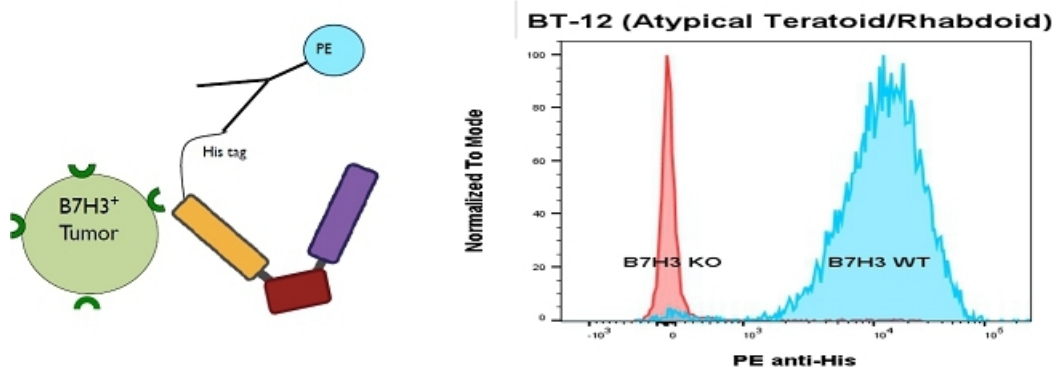
The purple line represents the GTB-3650 and the blue line represents GTB-3550.



5

**GTB-3650**

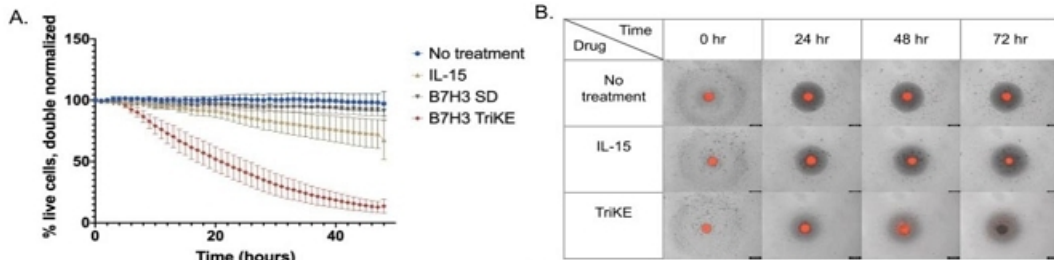
GTB-3650 is a TriKE® which targets CD33 on the surface of myeloid leukemias and an agonistic camelid engager to the potent activating receptor on NK cells, CD16. Use of this engager enhances the activity of wild type IL-15 included in GTB-3650. The TriKE® approach provides a novel way to specifically target these tumors by leveraging NK cells, which have been shown to mediate relapse protection in this setting, in an anti-CD33-targeted fashion. We are advancing GTB-3650 to clinical studies based on pre-clinical data showing a marked increase in potency compared to GTB-3550, which we anticipate could lead to an enhanced efficacy signal in AML and MDS. We advanced GTB-3650 through requisite preclinical studies and filed an Investigational New Drug (IND) application with the U.S. Food and Drug Administration (FDA) in December 2023. In late June 2024, the FDA cleared our IND Application for GTB-3650. We started study enrollment targeting patients with relapsed/refractory AML and high grade MDS on January 21, 2025. This initial study is testing GTB-3650 as monotherapy testing administration 2 weeks on and two weeks off (to prevent NK cell exhaustion) for at least 2 cycles of therapy, as agreed on with the FDA.



**GTB-5550**

GTB-5550 is a B7-H3 targeted TriKE® which targets B7-H3 on the surface of advanced solid tumors (figure above). GTB-5550 is our first dual camelid TriKE®. B7-H3 is expressed on a broad spectrum of solid tumor malignancies, allowing our team to target these malignancies through GTB-5550. Pre-clinical work has shown that this molecule has NK-cell targeted activity against a variety of solid tumors, including head and neck cancer squamous cell carcinoma (figure below), prostate cancer, breast cancer, ovarian cancer, glioblastoma, and lung cancer (amongst others). We are advancing GTB-5550 through preclinical studies and initiated a GMP manufacturing campaign in anticipation of filing an IND in the first half of 2025. A pre-IND packet was submitted to the FDA in October 2023 with a written response from the FDA in December 2023. The main question from the FDA was regarding pre-clinical toxicology and a pivot to subcutaneous dosing. The initial trial expected in 2025 is designed as a basket trial for patients with B7-H3+ solid tumors using Monday through Friday dosing (2 weeks on and 2 weeks off to prevent immune exhaustion), and is dependent on manufacturing of clinical materials.

6



**GTB-7550**

GTB-7550 TriKE® is a product candidate in development for the treatment of lupus and other autoimmune disorders. GTB-7550 TriKE® is a tri-specific molecule composed of a camelid nanobody that binds the CD16 receptor on NK cells, a scFv engager against CD19 on malignant and normal B cells, and a human IL-15 sequence between them.

Published data shows that GTB-7550 effectively targets CD19+ malignant cell lines and primary chronic lymphocytic leukemia (CLL). Preliminary data shows that GTB-7550 can target and eliminate normal B cells, which we are continuing to test in mice. We are currently exploring and assessing potential manufacturers of GTB-7550.

#### **Litigation Update**

As disclosed in our third quarter report on Form 10-Q for the period ended September 30, 2024, on November 14, 2023, former interim Chief Executive Officer, Dr. Gregory Berk filed a lawsuit in the U.S. District Court for the District of Massachusetts alleging that the Company discriminated and retaliated against Dr. Berk for engaging in protected whistleblowing activity in violation of the Sarbanes Oxley Act (“SOX”). Although the Company vigorously defended this matter and believes it to be without merit, the lawsuit was dismissed with prejudice on December 4, 2024 as a result of the parties’ settlement.

#### **Implications of Being a Smaller Reporting Company**

We are a “smaller reporting company” as defined in the Securities Exchange Act of 1934, as amended, or the Exchange Act, and have elected to take advantage of certain of the scaled disclosures available to smaller reporting companies. Accordingly, we may provide less public disclosure than larger public companies, including the inclusion of only two years of audited consolidated financial statements and only two years of management’s discussion and analysis of financial condition and results of operations disclosure and the inclusion of reduced disclosure about our executive compensation arrangements. As a smaller reporting company, we are also exempt from compliance with the auditor attestation requirements pursuant to the Sarbanes-Oxley Act. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests. We will continue to be a “smaller reporting company” until we have \$250 million or more in public float (based on our common stock) measured as of the last business day of our most recently completed second fiscal quarter or, in the event we have no public float or a public float (based on our common stock) that is less than \$700 million, annual revenues of \$100 million or more during the most recently completed fiscal year.

#### **Corporate Information**

Our common stock currently trades on the Nasdaq under the symbol “GTBP.” Our principal executive offices are located at 315 Montgomery Street, 10<sup>th</sup> Floor, San Francisco, CA 94104, and our telephone number is (415) 919-4040. We maintain a website at [www.gtbiopharma.com](http://www.gtbiopharma.com). Information contained on or accessible through our website is not, and should not be considered, part of, or incorporated by reference into, this prospectus.

### **THE OFFERING**

**Common Stock to be Offered** Up to 3,361,344 shares of common stock.

**Common Warrants to be Offered** Common warrants to purchase up to 3,361,344 shares of our common stock. Each common warrant has an exercise price of \$ \_\_\_\_\_ per share of common stock. Common warrants will become exercisable immediately after issuance and will expire five years from the date of issuance.

The shares of common stock and pre-funded warrants, and the accompanying common warrant, as the case may be, can only be purchased together in this offering but will be issued separately and will be immediately separable upon issuance. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the common warrants.

**Pre-funded Warrants to be Offered** We are also offering to certain purchasers whose purchase of shares of common stock in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock immediately following the consummation of this offering, the opportunity to purchase, if such purchasers so choose, pre-funded warrants to purchase shares of common stock, in lieu of shares of common stock that would otherwise result in any such purchaser’s beneficial ownership exceeding 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock. Each pre-funded warrant will be exercisable for one share of our common stock. The purchase price of each pre-funded warrant and accompanying common warrants will equal the price at which the share of common stock and accompanying common warrants are being sold to the public in this offering, minus \$0.0001, and the exercise price of each pre-funded warrant will be \$0.0001 per share. The pre-funded warrants will be exercisable immediately and may be exercised at any time until all of the pre-funded warrants are exercised in full. This offering also relates to the shares of common stock issuable upon exercise of any pre-funded warrants sold in this offering. For each pre-funded warrant we sell, the number of shares of common stock we are offering will be decreased on a one-for-one basis. Because we will also issue one common warrant to purchase one share of common stock for each share of our common stock and for each pre-funded warrant to purchase one share of our common stock sold in this offering, the number of common warrants sold in this offering will not change as a result of a change in the mix of the shares of our common stock and pre-funded warrants sold.

**Common Stock to be Outstanding Before this Offering** 2,234,328 shares.

**Common Stock to be Outstanding Immediately After this Offering** 5,595,672 shares, (assuming full exercise of the pre-funded warrants and assuming no exercise of the common warrants).

**Use of Proceeds** We estimate that the net proceeds from this offering will be approximately \$7.1 million, excluding the proceeds, if any, from the cash exercise of the common warrants in this offering. We currently intend to use the net proceeds from this offering for working capital and general corporate purposes, including the further development of our product candidates that are currently undergoing clinical trials, our product candidates that we expect to submit an investigational new drug application for in the near term, and our product candidates that are pre-clinical. See “*Use of Proceeds*” for additional information.

**Risk Factors** An investment in our securities involves a high degree of risk. See “*Risk Factors*” beginning on page 9 of this prospectus and the other information included and incorporated by reference in



this prospectus for a discussion of the risk factors you should carefully consider before deciding to invest in our securities.

**Nasdaq Symbol** Our common stock is listed on the Nasdaq Capital Market under the symbol “GTBP.” There is no established public trading market for the common warrants or pre-funded warrants, and we do not expect a market to develop. In addition, we do not intend to apply to list the common warrants or pre-funded warrants on any national securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the common warrants and pre-funded warrants will be limited.

Unless otherwise stated in this prospectus, the number of shares of our common stock to be outstanding as of the date of this prospectus and after this offering is based on 2,234,328 shares outstanding as of September 30, 2024, and excludes (a) placement agent warrants to purchase up to 201,680 shares of our common stock issuable upon the exercise of warrants to be issued to the placement agent in connection with this offering having an exercise price of \$ per share, (b) the shares of common stock issuable upon exercise of the common warrants and pre-funded warrants being offered by us in this offering, (c) previously issued and outstanding warrants to purchase up to 1,133,762 shares of our common stock, and (d) outstanding stock options to purchase up to 101,264 shares of our common stock. See “Note 7 – Common Stock Warrants and Options” to our Third Quarter Report filed on Form 10-Q that is incorporated by reference into this prospectus.

## RISK FACTORS

*Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below in addition to the other information contained in this prospectus and any prospectus supplement before deciding whether to invest in shares of our common stock. The risks summarized below and others are discussed more fully in the section titled “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2023, which is incorporated herein by reference. If any of the following risks or the risks incorporated by reference occur, our business, financial condition or operating results could be harmed. In that case, the trading price of our common stock could decline and you may lose part or all of your investment. In the opinion of management, the risks discussed below and incorporated by reference represent the material risks known to us. Additional risks and uncertainties not currently known to us or that we currently deem immaterial may also impair our business, financial condition and operating results and adversely affect the market price of our common stock.*

### Risks Related to Our Business

Risks related to our business risks include, but are not limited to, the following:

- Our financial condition raises substantial doubt as to our ability to continue as a going concern.
- Our business is at an early stage of development and we may not develop therapeutic products that can be commercialized.
- We have a history of operating losses and we expect to continue to incur losses for the foreseeable future. We may never generate revenue or achieve profitability.
- We will need additional capital to conduct our operations and develop our products, and our ability to obtain the necessary funding is uncertain.
- Our current and future indebtedness may impose significant operating and financial restrictions on us and affect our ability to access liquidity.
- The cost of our research and development programs may be significantly higher than expected, and there is no assurance that they will be successful in a timely manner, or at all.
- If our efforts to protect the proprietary nature of the intellectual property related to our technologies are not adequate, we may not be able to compete effectively in our market and our business would be harmed.
- Claims that we infringe the intellectual property rights of others may prevent or delay our drug discovery and development efforts.
- We may desire, or be forced, to seek additional licenses to use intellectual property owned by third parties, and such licenses may not be available on commercially reasonable terms, or at all.
- If we are unsuccessful in obtaining or maintaining patent protection for intellectual property in development or licensed from third parties, our business and competitive position would be harmed.
- If we fail to meet our obligations under our license agreements, we may lose our rights to key technologies on which our business depends.
- Our reliance on the activities of our non-employee consultants, research institutions and scientific contractors, whose activities are not wholly within our control, may lead to delays in development of our proposed products.
- Clinical drug development is costly, time-consuming and uncertain, and we may suffer setbacks in our clinical development program that could harm our business.
- If we experience delays or difficulties in the enrollment of patients in clinical trials, those clinical trials could take longer than expected to complete and our receipt of necessary regulatory approvals could be delayed or prevented.
- Obtaining regulatory approval, even after clinical trials that are believed to be successful, is an uncertain process.

- We will continue to be subject to extensive FDA regulation following any product approvals, and if we fail to comply with these regulations, we may suffer a significant setback in our business.
- Many of our business practices are subject to scrutiny and potential investigation by regulatory and government enforcement authorities, as well as to lawsuits brought by private citizens under federal and state laws. We could become subject to investigations, and our failure to comply with applicable law or an adverse decision in lawsuits may result in adverse consequences to us. If we fail to comply with U.S. healthcare laws, we could face substantial penalties and financial exposure, and our business, operations and financial condition could be adversely affected.
- Our product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

- We may expend our limited resources to pursue a particular product candidate or indication that does not produce any commercially viable products and may fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.
- Our products may be expensive to manufacture, and they may not be profitable if we are unable to control the costs to manufacture them.
- We currently lack manufacturing capabilities to produce our therapeutic product candidates at commercial-scale quantities and do not have an alternate manufacturing supply, which would negatively impact our ability to meet any demand for the product.
- Our business is based on novel technologies that are inherently expensive and risky and may not be understood by or accepted in the marketplace, which could adversely affect our future value.
- We could be subject to product liability lawsuits based on the use of our product candidates in clinical testing or, if obtained, following marketing approval and commercialization. If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to cease clinical testing or limit commercialization of our product candidates.
- We rely on third parties to supply candidates for clinical testing and to conduct preclinical and clinical trials of our product candidates. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may not be able to obtain regulatory approval for or commercialize our product candidates. As a result, our business could be substantially harmed.
- Our failure to maintain compliance with the Nasdaq Capital Market's ("Nasdaq") continued listing requirements could result in the delisting of our common stock.

These risks are described more fully in our Annual Report on Form 10-K for the year ended December 31, 2023, which is incorporated herein by reference.

## Risks Related to our Business

### Our financial condition raises substantial doubt as to our ability to continue as a going concern.

As of September 30, 2024, we had approximately \$6.5 million in cash and cash equivalents and restricted cash, and working capital of \$2.1 million, and we have incurred and expect to continue to incur significant costs in pursuit of our drug candidates. For the nine months ended September 30, 2024, we recorded a net loss of approximately \$9.4 million and used cash in operations of approximately \$10.4 million. Our unaudited consolidated condensed financial statements for the nine month period ended September 30, 2024 have been prepared assuming that we will continue to operate as a going concern, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business. To date, we have not generated substantial product revenues from our activities and have incurred substantial operating losses. We expect that we will continue to generate substantial operating losses for the foreseeable future until we complete development and approval of our product candidates. We will continue to fund our operations primarily through utilization of our current financial resources and additional raises of capital.

10

These conditions raise substantial doubt about our ability to continue as a going concern. For further information, please see Note 1 to our third quarter unaudited condensed consolidated financial statements for the nine-months ended September 30, 2024. The Company has evaluated the significance of the uncertainty regarding the Company's financial condition in relation to its ability to meet its obligations, which has raised substantial doubt about the Company's ability to continue as a going concern. While it is very difficult to estimate the Company's future liquidity requirements, the Company believes if it is unable to obtain additional financing, existing cash resources will not be sufficient to enable it to fund the anticipated level of operations through one year from the date the accompanying unaudited condensed consolidated financial statements are issued. There can be no assurances that the Company will be able to secure additional financing on acceptable terms. In the event the Company does not secure additional financing, the Company will be forced to delay, reduce, or eliminate some or all of its discretionary spending, which could adversely affect the Company's business prospects, ability to meet long-term liquidity needs and the ability to continue operations.

### Risks Related to this Offering and Our Common Stock

*There has been a limited public market for our common stock, and we do not know whether one will develop to provide you adequate liquidity. Furthermore, the trading price for our common stock, should an active trading market develop, may be volatile and could be subject to wide fluctuations in per-share price.*

Our common stock is now listed on the Nasdaq Capital Market under the trading symbol "GTBP"; historically, however, there has been a limited public market for our common stock. We cannot assure you that an active trading market for our common stock will develop or be sustained. The liquidity of any market for the shares of our common stock will depend on a number of factors, including:

- the number of stockholders;
- our operating performance and financial condition;
- the market for similar securities;
- the extent of coverage of us by securities or industry analysts; and
- the interest of securities dealers in making a market in the shares of our common stock.

Even if an active trading market develops, the market price for our common stock may be highly volatile and could be subject to wide fluctuations. In addition, the price of shares of our common stock could decline significantly if our future operating results fail to meet or exceed the expectations of market analysts and investors and actual or anticipated variations in our quarterly operating results could negatively affect our share price.

The volatility of the price of our common stock may also be impacted by the risks discussed under this "Risk Factors" section, in addition to other factors, including:

- developments in the financial markets and worldwide or regional economies;
- announcements of innovations or new products or services by us or our competitors;
- announcements by the government relating to regulations that govern our industry;
- significant sales of our common stock or other securities in the open market;
- variations in interest rates;
- changes in the market valuations of other comparable companies; and

- changes in accounting principles.

***Our outstanding warrants and options may affect the market price of our common stock***

As of the date of this prospectus, we had 2,234,328 shares of common stock outstanding and issued and had outstanding warrants for the purchase of up to 1,120,429 additional shares of common stock at a weighted average exercise price of \$18.85 per share, all of which are exercisable as of the date of this prospectus (subject to certain beneficial ownership limitations). In addition, we had outstanding options for the purchase of up to 124,600 additional shares of common stock at a weighted average exercise price of \$32.69 per share, 105,154 of which are exercisable as of the date of this prospectus. The amount of common stock reserved for issuance may have an adverse impact on our ability to raise capital and may affect the price and liquidity of our common stock in the public market. In addition, the issuance of these shares of common stock will have a dilutive effect on current stockholders' ownership.

***Because our common stock may be deemed a low-priced "penny" stock, an investment in our common stock should be considered high-risk and subject to marketability restrictions.***

Historically, the trading price of our common stock has been \$5.00 per share or lower, and deemed a penny stock, as defined in Rule 3a51-1 under the Exchange Act, and subject to the penny stock rules of the Exchange Act specified in rules 15g-1 through 15g-100. Those rules require broker-dealers, before effecting transactions in any penny stock, to:

- deliver to the customer, and obtain a written receipt for, a disclosure document;
- disclose certain price information about the stock;
- disclose the amount of compensation received by the broker-dealer or any associated person of the broker-dealer;
- send monthly statements to customers with market and price information about the penny stock; and
- in some circumstances, approve the purchaser's account under certain standards and deliver written statements to the customer with information specified in rules.

Consequently, the penny stock rules may restrict the ability or willingness of broker-dealers to sell the common stock and may affect the ability of holders to sell their common stock in the secondary market and the price at which such holders can sell any such securities. These additional procedures could also limit our ability to raise additional capital in the future.

***Financial Industry Regulatory Authority ("FINRA") sales practice requirements may also limit a stockholder's ability to buy and sell our common stock, which could depress the price of our common stock.***

In addition to the "penny stock" rules described above, FINRA has adopted rules that require a broker-dealer to have reasonable grounds for believing that the investment is suitable for that customer before recommending an investment to a customer. Prior to recommending speculative low-priced securities to their non-institutional customers, broker-dealers must make reasonable efforts to obtain information about the customer's financial status, tax status, investment objectives and other information. Under interpretations of these rules, FINRA believes that there is a high probability that speculative low-priced securities will not be suitable for at least some customers. Thus, the FINRA requirements make it more difficult for broker-dealers to recommend that their customers buy our common stock, which may limit your ability to buy and sell our shares of common stock, have an adverse effect on the market for our shares of common stock, and thereby depress our price per share of common stock.

***If securities or industry analysts do not publish research or reports about our business, or if they issue an adverse or misleading opinion regarding our stock, our stock price and trading volume could decline.***

The trading market for our common stock may be influenced by the research and reports that industry or securities analysts publish about us or our business. We currently have research coverage by only one securities analyst, and we may never obtain research coverage by additional analysts. If no or few securities or industry analysts commence coverage of us, the trading price for our common stock may be negatively affected. In the event that we receive additional securities or industry analyst coverage, if any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our stock performance, or if our operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

***Anti-takeover provisions may limit the ability of another party to acquire us, which could cause our stock price to decline.***

Delaware law and our restated certificate of incorporation ("certificate of incorporation"), our restated bylaws ("bylaws") and other governing documents contain provisions that could discourage, delay or prevent a third party from acquiring us, even if doing so may be beneficial to our stockholders, which could cause our stock price to decline. In addition, these provisions could limit the price investors would be willing to pay in the future for shares of our common stock.

***We do not currently or for the foreseeable future intend to pay dividends on our common stock.***

We have never declared or paid any cash dividends on our common stock. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. As a result, any return on your investment in our common stock will be limited to the appreciation in the price of our common stock, if any.

***Purchasers of our common stock in this offering will experience immediate and substantial dilution in the book value of their investment.***

The offering price per share in this offering is substantially higher than the net tangible book value per share of our ordinary shares before giving effect to this offering. Accordingly, purchasers of our securities in this offering will incur immediate dilution of approximately \$0.73 per share, representing the difference between the public offering price per share and our as-adjusted net tangible book value per share as of September 30, 2024. Furthermore, if outstanding options or warrants are exercised, purchasers could experience further dilution. For more information, including how these amounts were calculated, see "Dilution."

***Our management will have broad discretion as to the use of the proceeds from this offering, and may not use the proceeds effectively.***

Our management will have broad discretion as to the application of the net proceeds from this offering. Currently, we intend to use the net proceeds from this offering for working capital and general corporate purposes, including the further development of our product candidates that are currently undergoing clinical trials, our product candidates that we expect to submit an investigational new drug application for in the near term, and our product candidates that are pre-clinical. See "Use of Proceeds." Purchasers will not have the opportunity, as part of their investment decision, to assess whether these proceeds are being used appropriately. Our management may use the net

proceeds for corporate purposes that may not improve our financial condition or market value, which could cause the price of our securities to decline.

***We will need additional capital to conduct our operations and develop our products, and our ability to obtain the necessary funding is uncertain.***

We have used a significant amount of cash since inception to finance the continued development and testing of our product candidates, and we expect to need substantial additional capital resources to develop our product candidates going forward and launch and commercialize any product candidates for which we receive regulatory approval.

13

---

We may not be successful in generating and/or maintaining operating cash flow, and the timing of our capital expenditures and other expenditures may not result in cash sufficient to sustain our operations through the commercialization of our product candidates. If financing is not sufficient and additional financing is not available or available only on terms that are detrimental to our long-term survival, it could have a material adverse effect on our ability to continue to function. The timing and degree of any future capital requirements will depend on many factors, including:

- accuracy of the assumptions underlying our estimates for capital needs in 2025 and beyond;
- scientific and clinical progress in our research and development programs;
- the magnitude and scope of our research and development programs and our ability to establish, enforce and maintain strategic arrangements for research, development, clinical testing, manufacturing and marketing;
- our progress with pre-clinical development and clinical trials;
- the time and costs involved in obtaining regulatory approvals;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patent claims; and
- the number and type of product candidates that we pursue.

Additional financing through strategic collaborations, public or private equity or debt financings or other financing sources may not be available on acceptable terms, or at all. Additional equity financing could result in significant dilution to our stockholders, and any debt financings will likely involve covenants restricting our business activities. Further, if we obtain additional funds through arrangements with collaborative partners, these arrangements may require us to relinquish rights to some of our technologies, product candidates or products that we would otherwise seek to develop and commercialize on our own.

If sufficient capital is not available, we may be required to delay, reduce the scope of or eliminate one or more of our research or product development initiatives, any of which could have a material adverse effect on our financial condition or business prospects.

***There is no public market for the common warrants or pre-funded warrants being offered by us in this offering.***

There is no established public trading market for the common warrants or the pre-funded warrants, and we do not expect a market to develop. In addition, we do not intend to apply to list the common warrants or pre-funded warrants on any national securities exchange or other nationally recognized trading system. Without an active market, the liquidity of the common warrants and pre-funded warrants will be limited.

***Holders of warrants purchased in this offering will have no rights as common stockholders until such holders exercise their warrants and acquire our common stock.***

Until holders of warrants acquire shares of our common stock upon exercise thereof, holders of warrants will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of the warrants, the holders will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

***This is a reasonable best efforts offering, no minimum amount of securities is required to be sold, and we may not raise the amount of capital we believe is required for our business plans, including our near-term business plans.***

The placement agent has agreed to use its reasonable best efforts to solicit offers to purchase the securities in 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. There is no required minimum number of securities that must be sold as a condition to completion of this offering. Because there is no minimum offering amount required as a condition to the closing of this offering, the actual offering amount, placement agent fees and proceeds to us are not presently determinable and may be substantially less than the maximum amounts set forth above. We may sell fewer than all of the securities offered hereby, which may significantly reduce the amount of proceeds received by us, and investors in this offering will not receive a refund in the event that we do not sell an amount of securities sufficient to support our continued operations, including our near-term continued operations. Thus, we may not raise the amount of capital we believe is required for our operations in the short-term and may need to raise additional funds, which may not be available or available on terms acceptable to us.

***Purchasers who purchase our securities in this offering pursuant to a securities purchase agreement may have rights not available to purchasers that purchase without the benefit of a securities purchase agreement.***

In addition to rights and remedies available to all purchasers in this offering under federal securities and state law, the purchasers that enter into a securities purchase agreement will also be able to bring claims of breach of contract against us. The ability to pursue a claim for breach of contract provides those investors with the means to enforce the covenants uniquely available to them under the securities purchase agreement including, but not limited to: (i) timely delivery of shares; (ii) agreement to not issue any shares or securities convertible into shares for a period of sixty days from closing of the offering, subject to certain exceptions; and (iii) indemnification for breach of contract.

***Our common stock may be at risk for delisting from the Nasdaq Capital Market in the future if we do not maintain compliance with Nasdaq's continued listing requirements. Delisting could adversely affect the liquidity of our common stock and the market price of our common stock could decrease.***

Our common stock is currently listed on Nasdaq. Nasdaq has minimum requirements that a company must meet in order to remain listed on Nasdaq, including corporate governance standards and a requirement that we maintain a stockholders' equity above \$2,500,000 as set forth in Nasdaq Listing Rule 5550(b)(1).

On November 21, 2024, the Company received a letter from Nasdaq notifying the Company that its amount of stockholders' equity has fallen below the \$2,500,000 required minimum for continued listing set forth in Nasdaq Listing Rule 5550(b)(1).

14

---

Nasdaq's Letter has no immediate effect on the listing of the Company's common stock, and its common stock will continue to trade on The Nasdaq Capital Market under the symbol "GTBP" at this time. Pursuant to Nasdaq Listing Rules, the Company provided Nasdaq with a plan to achieve and sustain compliance on December 31, 2024. If Nasdaq accepts the Company's plan to regain compliance, Nasdaq may grant an extension of up to 180 calendar days from the date of the Letter to evidence compliance. If Nasdaq does not accept the Company's plan to regain compliance, the Company will have the opportunity to appeal the decision to a Nasdaq Hearings Panel. The Company intends to submit to Nasdaq, within the requisite time period, a plan to regain compliance with Listing Rule 5550(b)(1). There can be no assurance that Nasdaq will accept the Company's plan, that the Company will be able to regain compliance with Listing Rule 5550(b)(1) or that the Company will be able to meet the continued listing requirements during any compliance period that may be granted by Nasdaq.

In the future, if we fail to maintain such minimum requirements and a final determination is made by Nasdaq that our common stock must be delisted, the liquidity of our common stock would be adversely affected and the market price of our common stock could decrease. In addition, if delisted, we would no longer be subject to Nasdaq rules, including rules requiring us to have a certain number of independent directors and to meet other corporate governance standards. Our failure to be listed on Nasdaq or another established securities market would have a material adverse effect on the value of your investment in us.

#### USE OF PROCEEDS

We estimate that the net proceeds from the offering will be approximately \$7.1 million, based on the assumed public offering price of \$2.38 per share and common warrant, which is the last reported sales price of our common stock on Nasdaq on January 23, 2024 after deducting the placement agent fees and estimated offering expenses payable by us, assuming no sale of any fixed combinations of warrants and pre-funded warrants offered hereunder. We may only receive additional proceeds from the exercise of the common warrants issuable in connection with this offering and, if such common warrants are exercised in full for cash, the estimated net proceeds will increase to \$15.1 million. However, because this is a reasonable best-efforts offering and there is no minimum offering amount required as a condition to the closing of this offering, the actual offering amount, the placement agent's fees and net proceeds to us are not presently determinable and may be substantially less than the maximum amounts set forth on the cover page of this prospectus. Based on the assumed public offering price set forth above, we estimate that our net proceeds from the sale of 75%, 50%, and 25% of the securities offered in this offering would be approximately \$5.2 million, \$3.4 million, and \$1.5 million, respectively, after deducting the estimated placement agent fees and estimated offering expenses payable by us.

We currently intend to use the net proceeds from this offering for working capital to fund our clinical programs and general corporate purposes, including the further development of: our product candidates that are currently undergoing clinical trials, our product candidates that we expect to submit an investigational new drug application for in the near term, and our product candidates that are pre-clinical. This expected use of proceeds from this offering represents our intentions based upon our current plans and prevailing business conditions, which could change in the future as our plans and prevailing business conditions evolve. The amounts and timing of our use of proceeds will vary depending on a number of factors, including the amount of cash generated or used by our operations. As a result, we will retain broad discretion in the allocation of the net proceeds of this offering.

#### CAPITALIZATION

The following table presents a summary of our cash and cash equivalents and capitalization as of September 30, 2024:

- on an actual basis; and
- on an as adjusted basis to reflect the issuance and sale of common stock and accompanying common warrants in this offering, after deducting placement agent fees and estimated offering expenses payable by us. The as adjusted basis assumes no pre-funded warrants are sold in this offering and excludes the proceeds, if any, from the exercise of any common warrants issued in this offering.

15

The unaudited as adjusted information below is prepared for illustrative purposes only and our capitalization following the completion of this offering will be adjusted based on the actual public offering price and other terms of this offering determined at pricing. You should read the following table in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations and the historical financial statements and related notes in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2023 and our Quarterly Report on Form 10-Q for the period ended September 30, 2024, incorporated herein by reference.

	As of September 30, 2024	
	Actual	As adjusted
Cash and cash equivalents	\$ 6,418,000	\$ 13,547,000
Stockholders' equity:		
Convertible preferred stock, \$0.01 par value, 15,000,000 shares authorized Series C, 96,230 shares issued and outstanding	\$ 1,000	\$ 1,000
Common stock: \$0.001 par value; 250,000,000 shares authorized; 2,234,328 shares issued and outstanding, actual; 5,595,672 shares issued and outstanding, pro forma as adjusted	\$ 2,000	\$ 6,000
Additional paid-in capital	\$ 693,546,000	\$ 700,671,000
Accumulated deficit	\$ (691,452,000)	\$ (691,452,000)
Total stockholders' equity	\$ 2,097,000	\$ 9,226,000

Each \$0.25 increase (decrease) in the assumed public offering price of \$2.38 per share would increase (decrease) each of cash and cash equivalents, additional paid-in capital and total shareholders' equity by approximately \$790,000, assuming the number of shares of common stock and common warrants offered, as set forth on the cover page of this prospectus, remains the same, and after deducting estimated placement agent fees and estimated offering expenses. Similarly, each increase (decrease) of 100,000 shares in the number of shares of common stock and common warrants offered would increase (decrease) cash and cash equivalents, additional paid-in capital and total shareholders' equity by approximately \$223,720, assuming the assumed public offering price remains the same, and after deducting estimated placement agent fees and estimated offering expenses payable by us. The pro forma as adjusted information discussed above is illustrative only and will be adjusted based on the actual public offering price and other terms of this offering determined at pricing.

Unless otherwise stated in this prospectus, the number of shares of our common stock to be outstanding as of the date of this prospectus and after this offering is based on 2,234,328 shares outstanding as of September 30, 2024, and excludes (a) placement agent warrants to purchase up to 201,680 shares of our common stock issuable upon the exercise of warrants to be issued to the placement agent in connection with this offering having an exercise price of \$ per share, (b) the shares of common stock issuable upon exercise of the common warrants and pre-funded warrants being offered by us in this offering, (c) previously issued and outstanding warrants to purchase up to 1,133,762 shares of our common stock, and (d) outstanding stock options to purchase up to 101,264 shares of our common stock. See "Note 7 – Common Stock Warrants and Options" to our Third Quarter Report filed on Form 10-Q that is incorporated by reference into this prospectus.

#### DILUTION

If you purchase shares of our common stock, your interest will be diluted immediately to the extent of the difference between the offering price per share you will pay in this offering and the as adjusted net tangible book value per share of our common stock after this offering. Net tangible book value per share represents our total tangible assets less total liabilities, divided by the number of shares of our common stock outstanding.

As of September 30, 2024, our net tangible book value was \$2,097,000, or \$0.94 per share of Common Stock.

After giving effect to the foregoing pro forma adjustments and the sale by us of 3,361,344 shares of common stock and/or pre-funded warrants at an assumed public offering price of \$2.38 per share and accompanying common warrant, and after deducting the placement agent fees and estimated offering expenses payable by us, our adjusted net tangible book value as of September 30, 2024, would have been \$9,226,469, or \$1.65 per share. This represents an immediate increase in as adjusted net tangible book value of approximately \$0.71 per share to our existing stockholders, and an immediate dilution of \$0.73 per share to purchasers of shares in this offering, as illustrated in the following table. The information below is illustrative only and will change based on actual pricing and other terms of this offering determined at pricing. The final public offering price will be determined through negotiation between us, the placement agent and the investors in the offering and may be at a discount to the current market price. Therefore, the assumed public offering price used throughout this prospectus may not be indicative of the final public offering price.

Assumed public offering price	\$	2.38
Net tangible book value per share as of September 30, 2024	\$	0.94
Net increase in net tangible book value per share attributable to existing shareholders	\$	0.71
As adjusted net tangible book value per share after this offering	\$	1.65
Dilution in net tangible book value per share to new investors in the offering	\$	(0.73)

Unless otherwise stated in this prospectus, the number of shares of our common stock to be outstanding as of the date of this prospectus and after this offering is based on 2,234,328 shares outstanding as of September 30, 2024, and excludes (a) placement agent warrants to purchase up to 201,680 shares of our common stock issuable upon the exercise of warrants to be issued to the placement agent in connection with this offering having an exercise price of \$ per share, (b) the shares of common stock issuable upon exercise of the common warrants and pre-funded warrants being offered by us in this offering, (c) previously issued and outstanding warrants to purchase up to 1,133,762 shares of our common stock, and (d) outstanding stock options to purchase up to 101,264 shares of our common stock. See "Note 7 – Common Stock Warrants and Options" to our Third Quarter Report filed on Form 10-Q that is incorporated by reference into this prospectus.

## EXECUTIVE COMPENSATION

### Summary Compensation Table

The following table summarizes all compensation for the last two fiscal years awarded to, earned by, or paid to our Chief Executive Officer (principal executive officer) and our two most highly compensated executive officers other than our CEO who were either serving as executive officers at the end of our last completed fiscal year or for whom disclosure would have been provided but for the fact that the individual was not serving as an executive officer at the end of our last completed fiscal year, whose total compensation exceeded \$100,000 during such fiscal year ends.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards <sup>(1)</sup> (\$)	Option Awards <sup>(2)</sup> (\$)	All Other Compensation (\$)	Total (\$)
Michael Breen Chairman, Interim Chief Executive Officer, and President	2024	\$ 556,200	417,150	–	–	213,622 <sup>(3)</sup>	1,186,972
	2023	\$ 556,200	312,863	57,600 <sup>(6)</sup>	425,000 <sup>(7)</sup>	174,171 <sup>(3)</sup>	1,525,834
Alan Urban Chief Financial Officer	2024	\$ 187,500	87,500	–	40,681 <sup>(8)</sup>	27,643 <sup>(4)</sup>	343,324
	2023	\$ –	–	–	–	–	–
Manu Ohri Former Chief Financial Officer	2024	\$ 203,540	–	–	–	104,264 <sup>(5)</sup>	307,804
	2023	\$ 432,000	172,800	57,600 <sup>(9)</sup>	425,000 <sup>(10)</sup>	42,271 <sup>(5)</sup>	1,129,671

- (1) The amounts in this column represent the aggregate grant date fair value of restricted stock awards, determined in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 718. We determine the grant date fair value of the awards by multiplying the number of units granted by the closing market price of one share of our common stock on the award grant date. These amounts do not reflect the actual economic value that will be realized by the named executive officer upon the vesting or the sale of the common stock awards.
- (2) This column represents option awards computed in accordance with FASB ASC Topic 718, excluding the effect of estimated forfeitures related to service-based vesting conditions. For additional information on the valuation assumptions with respect to the option grants, refer to Note 1 of our financial statements in the Annual Report. These amounts do not correspond to the actual value that will be recognized by the named executives from these awards.
- (3) Other compensation for 2024 includes \$131,374 in paid time off payout, \$60,000 in medical insurance, life insurance and long-term disability insurance premiums, and \$22,248 in employer pension contributions. Other compensation for 2023 includes \$128,833 in medical insurance, life insurance and long-term disability insurance premiums, and \$45,338 in employer pension contributions.
- (4) Other compensation for 2024 includes \$19,245 in medical insurance premiums, and \$8,398 employer 401(k) contributions.
- (5) Other compensation for 2024 includes \$78,300 in paid time off payout, and \$25,964 in medical insurance premiums, life insurance and long-term disability insurance premiums, and medical expense reimbursements. Other compensation for 2023 includes \$42,271 in medical insurance, life insurance and long-term disability insurance premiums, medical expense reimbursements and employer 401(k) contributions.
- (6) Represents the aggregate grant date fair value 6,666 shares of our common stock issued on August 11, 2023 at a closing market price of \$8.70 per share as compensation for service as our Interim Chief Executive Officer.
- (7) Represents the aggregate grant date fair value of options to purchase 16,666 shares of common stock issued on January 27, 2023, with 1/12<sup>th</sup> of the shares vesting on the monthly anniversary of January 1, 2023 as compensation for service on our Board of Directors.
- (8) Represents the aggregate grant date fair value of options to purchase 23,335 shares of common stock issued on October 17, 2024, with 1/36<sup>th</sup> of the shares vesting on the monthly anniversary of June 3, 2024 until fully vested, subject to acceleration
- (9) Represents the aggregate grant date fair value 6,666 shares of our common stock issued on August 11, 2023 at a closing market price of \$8.70 per share.
- (10) Represents the aggregate grant date fair value of options to purchase 16,666 shares of common stock issued on January 27, 2023, with 1/12<sup>th</sup> of the shares vesting on the monthly anniversary of January 1, 2023

## Outstanding Equity Awards at Fiscal Year End

The following table sets forth information regarding unexercised stock options for each named executive officer as of December 31, 2024.

Name	Number of securities underlying unexercised options exercisable (#)	Number of securities underlying unexercised options unexercisable (#)	Option exercise price (\$)	Option expiration date
Michael Breen	1,666(1)	—	74.40	7/14/2032
	16,666(1)	—	25.50	1/27/2033
Alan Urban	4,537(2)	18,798(2)	2.11	10/17/2034

(1) Consists of options granted to Mr. Breen as compensation for service on our Board of Directors.

(2) Consists of options granted to Mr. Urban that vest as follows: 1/36<sup>th</sup> of the shares vest on the monthly anniversary of June 3, 2024 until fully vested, subject to acceleration.

## Pay Versus Performance

Year	Summary Compensation Table Total for PEO <sup>(1)</sup>	Compensation Actually Paid to PEO <sup>(2)</sup>	Average Summary Compensation Table Total for Non-PEO NEO <sup>(3)</sup>	Average Compensation Actually paid to Non-PEO NEOs <sup>(4)</sup>	Value of Initial Fixed \$100 Investment Based on Total Shareholder Return <sup>(5)</sup>	Net Loss (In Thousands) <sup>(6)</sup>
2024	\$ 1,186,972	\$ 1,186,972	\$ 343,324	\$ 359,710	\$ 3.25	(a)
2023	\$ 1,525,834	\$ 1,258,279	\$ 1,129,671	\$ 862,116	\$ 8.15	\$ 7,597
2022	\$ 1,892,293	\$ 1,498,165	\$ 944,544	\$ 1,029,311	\$ 28.31	\$ 20,884

(a) Amount will be reported on the Company's 2024 Form 10-K.

(1) The dollar amounts reported are the amounts of total compensation reported in our Summary Compensation Table for each of 2024, 2023, and 2022 for Mr. Breen, our Interim Chief Executive Officer (our principal executive officer (PEO) from and after March 2, 2022).

(2) The dollar amounts reported represent the amount of "compensation actually paid," as computed in accordance with SEC rules. The dollar amounts do not reflect the actual amount of compensation earned by or paid during the applicable year. In accordance with SEC rules, the following adjustments were made to total compensation to determine the compensation actually paid:

Year	Reported Summary Compensation Table Total for PEO	Reported Value of Equity Awards (a)	Equity Award Adjustments (b)	Compensation Actually Paid to PEO
2024	\$ 1,186,972	\$ —	\$ —	\$ 1,186,972
2023	\$ 1,525,834	\$ 482,600	\$ 215,045	\$ 1,258,279
2022	\$ 1,892,293	\$ 800,584	\$ 406,456	\$ 1,498,165

(a) The grant date fair value of equity awards represents the total of the amounts reported in the "Stock awards" and "Option awards" columns in the Summary Compensation Table for the applicable year.

(b) The equity award adjustments for each applicable year include the addition (or subtraction, as applicable) of the following: (i) the year-end fair value of any equity awards granted in the applicable year that are outstanding and vested as of the end of the year; (ii) the amount of change as of the end of the applicable year (from the end of the prior fiscal year) in fair value of any awards granted in prior years that are outstanding and unvested as of the end of the applicable year; (iii) for awards that are granted and vest in same applicable year, the fair value as of the vesting date; (iv) for awards granted in prior years that vest in the applicable year, the amount equal to the change as of the vesting date (from the end of the prior fiscal year) in fair value; (v) for awards granted in prior years that are determined to fail to meet the applicable vesting conditions during the applicable year, a deduction for the amount equal to the fair value at the end of the prior fiscal year; and (vi) the dollar value of any dividends or other earnings paid on stock or option awards in the applicable year prior to the vesting date that are not otherwise reflected in the fair value of such award or included in any other component of total compensation for the applicable year. The valuation assumptions used to calculate fair values did not materially differ from those disclosed at the time of grant. The amounts deducted or added in calculating the equity award adjustments are as follows:

Year	Year End Fair Value of Outstanding and Unvested Equity Awards Granted During the Year	Year over Year Change in Fair Value of Outstanding and Unvested Equity Awards Granted in Prior Years	Fair Value as of Vesting Date of Equity Awards Granted and Vested in the Year	Year over Year Change in Fair Value of Equity Awards Granted in Prior Years that Vested in the Year	Total Equity Award Adjustments
2024	\$ —	\$ —	\$ —	\$ —	\$ —
2023	\$ 10,641	\$ —	\$ 204,404	\$ —	\$ 215,045
2022	\$ 10,265	\$ (25,072)	\$ 997,908	\$ (576,645)	\$ 406,456

(3) The dollar amounts reported represent the average of the amounts reported for the Company's named executive officers (NEOs) as a group (excluding our CEO) in the "Total" column of the Summary Compensation Table in each applicable year. Mr. Urban is the only NEO included for purposes of calculating the average amounts in 2024, and Mr. Ohri is the only NEO included for purposes of calculating the average amounts in 2023 and 2022.

- (4) The dollar amounts reported represent the average amount of “compensation actually paid” to the NEOs as a group (excluding our CEO), as computed in accordance with SEC rules. The dollar amounts do not reflect the actual average amount of compensation earned by or paid to the NEOs as a group (excluding our CEO) during the applicable year. In accordance with the SEC rules, the following adjustments were made to average total compensation for the NEOs as a group (excluding our CEO) for each year to determine the compensation actually paid, using the same methodology described above in Note 2:

Year	Average Reported Summary Compensation Table Total for Non-PEO NEOs	Average Reported Value of Equity Awards	Average Equity Award Adjustments (a)	Average Compensation Actually Paid to Non-PEO NEOs
2024	\$ 343,324	\$ 40,681	\$ 57,067	\$ 359,710
2023	\$ 1,129,671	\$ 482,600	\$ 215,045	\$ 862,116
2022	\$ 944,544	\$ 448,515	\$ 533,282	\$ 1,029,311

- (a) The amounts deducted or added in calculating the total average equity award adjustments are as follows:

Year	Average Year End Fair Value of Outstanding and Unvested Equity Awards Granted During the Year	Year over Year Average Change in Fair Value of Unvested Equity Awards Granted in Prior Years	Average Fair Value as of Vesting Date of Equity Awards Granted and Vested in the Year	Year over Year Average Change in Fair Value of Equity Awards Granted in Prior Years that Vested in the Year	Total Average Equity Award Adjustments
2024	\$ 49,157	\$ —	\$ 7,910	\$ —	\$ 57,067
2023	\$ 10,641	\$ —	\$ 204,404	\$ —	\$ 215,045
2022	\$ 97,175	\$ —	\$ 436,107	\$ —	\$ 533,282

- (5) Cumulative total stockholder return is calculated by dividing the sum of the cumulative amount of dividends for the measurement period, assuming dividend reinvestment, and the difference between the Company’s share price at the end and the beginning of the measurement period, by the Company’s share price at the beginning of the measurement period. Represents the value on the last trading day of each of 2024, 2023 and 2022 of an investment of \$100 in our common stock on the last trading day of 2021.

- (6) The dollar amounts reported represent the amount of net loss reflected in our audited financial statements for the applicable year.

#### Analysis of Information Presented in the Pay versus Performance Table

The Company’s executive compensation program reflects a variable pay-for-performance philosophy. While the Company utilizes several performance measures to align executive compensation with Company performance, all of those Company measures are not presented in the Pay versus Performance table. Moreover, the Company generally seeks to incentivize long-term performance, and therefore does not specifically align the Company’s performance measures with compensation that is actually paid (as computed in accordance with SEC rules) for a particular year. In accordance with SEC rules, the Company is providing the following narrative disclosure regarding the relationships between information presented in the Pay versus Performance table.

#### Compensation Actually Paid and Cumulative Total Stockholder Return

During fiscal 2023 and 2024, compensation actually paid to our PEO decreased from \$1,258,279 in fiscal 2023 to \$1,186,972 in fiscal 2024, and average compensation actually paid to our named executive officers other than our PEO decreased from \$862,116 in fiscal 2023 to \$359,710 in fiscal 2024. During fiscal 2022 and 2023, compensation actually paid to our PEO decreased from \$1,498,165 in fiscal 2022 to \$1,258,279 in fiscal 2023, and average compensation actually paid to our named executive officers other than our PEO decreased from \$1,029,311 in fiscal 2022 to \$862,116 in fiscal 2023.

Over the same period, the value of an investment of \$100 in our common stock on the last trading day of 2021 decreased by \$71.69 to \$28.31 during fiscal 2022, further decreased by \$20.16 to \$8.15 during fiscal 2023, and further decreased by \$4.90 to \$3.25 during fiscal 2024, for a total decrease from fiscal 2022 through fiscal 2024 of \$96.75.

#### Compensation Actually Paid and Net Loss

During fiscal 2023 and 2024, compensation actually paid to our PEO decreased from \$1,258,279 in fiscal 2023 to \$1,186,972 in fiscal 2024, and average compensation actually paid to our named executive officers other than our PEO decreased from \$862,116 in fiscal 2023 to \$359,710 in fiscal 2024. During fiscal 2022 and 2023, compensation actually paid to our PEO decreased from \$1,498,165 in fiscal 2022 to \$1,258,279 in fiscal 2023, and average compensation actually paid to our named executive officers other than our PEO decreased from \$1,029,311 in fiscal 2022 to \$862,116 in fiscal 2023.

Our net loss during fiscal 2024 will be reported on the Company’s 2024 Form 10-K. Our net loss decreased by \$13,287,000 during fiscal 2023 (from a net loss in fiscal 2022 of \$20,884,000 to a net loss in fiscal 2023 of \$7,597,000).

#### Employment Agreements

The Company is party to employment agreements with both Michael Breen and Alan Urban, each of which are described below. The Company does not currently have employment agreements with any of its other officers and directors.

#### Michael Breen, Chairman, Interim Chief Executive Officer, and President

On December 31, 2021, the Company entered into a one-year, annually renewable executive services agreement with Mr. Breen, effective November 8, 2021, and amended on June 17, 2022 and February 20, 2023. Under the terms of the amended executive services agreement, Mr. Breen will receive an annual base salary of \$556,200, reimbursement for executive life insurance premiums, a pension contribution equal to 4% of Mr. Breen’s gross annual salary, and right to receive any benefit and participate in any benefit plan generally available to the most senior level of employees of the Company. Mr. Breen is eligible to participate in our performance bonus plan or as otherwise determined by our Compensation Committee, with a target annual bonus of 75% of his annual base salary with a minimum guaranteed performance bonus of 25% of base salary.

Upon the termination of Mr. Breen’s services for any reason, Mr. Breen will receive his accrued but unpaid salary and vacation pay through the date of termination and any other benefits accrued to him under any benefit plans outstanding at such time, and the reimbursement of documented, unreimbursed expenses incurred prior to such date. Upon our termination of Mr. Breen’s services without cause (as defined in his services agreement) or upon Mr. Breen’s termination of his employment for good reason (as defined in his services agreement) prior to the end of the term of his services agreement, Mr. Breen shall also receive (i) a lump sum payment equal to the greater of the amount of his annual base salary (at the then-current rate) that he would have earned through the end of the term of the agreement, and 50% of his annual base salary, plus (ii) a lump sum payment equal to the greater of the bonus paid or payable to Mr. Breen for the immediately preceding year, and the target bonus under our performance bonus plan, if any, in effect during the immediately preceding year, plus (iii) monthly reimbursement for the cost of medical, life and disability insurance coverage at a level equivalent to that provided by our company for a period of the earlier of (a) one year and (b) the time Mr. Breen begins alternative services wherein said insurance coverage is available and



**Alan Urban, Chief Financial Officer**

On June 7, 2024, the Company entered into an Employment Agreement with Mr. Urban (the “Employment Agreement”). The Employment Agreement is effective from June 3, 2024 (the “Effective Date”) and shall continue for a period of one year. The Employment Agreement shall automatically renew for successive one year periods unless and until either party provides sixty (60) days’ advance written notice prior to applicable renewal term. Pursuant to the Employment Agreement, Mr. Urban will receive an annual base salary of \$375,000 and is eligible to earn an annual discretionary bonus of up to 40% of his annual base salary each calendar year during the term, subject to the achievement of applicable Company and individual performance goals, as determined in the Company’s sole discretion. Mr. Urban is eligible to receive a stock award of the Registrant’s Common Stock following the three months after the Effective Date. The Employment Agreement further provides that Mr. Urban will be eligible to receive any benefit and participate in any benefit plan generally available to employees of the Company.

The Company may terminate the Employment Agreement without Cause (as such term is defined in the Employment Agreement) at any time and Mr. Urban may terminate his employment for Good Reason (as such term is defined in the Employment Agreement) at any time. Upon a termination of Mr. Urban’s employment by the Company without Cause or by Mr. Urban for Good Reason, Mr. Urban will be entitled to receive (i) for a termination or resignation that occurs during the first six months following the Effective Date, a cash severance equal to two (2) months of Mr. Urban’s then current Annual Base Salary (as such term is defined in the Employment Agreement) or (ii) for a termination or resignation that occurs any time thereafter, a cash severance equal to five (5) months of Mr. Urban’s then current Annual Base Salary, in either case less deductions and withholding required by law, payable in a lump sum within seventy (70) days of the termination of employment (or such shorter period as may allow the severance payment to be exempt from Code Section 409A). Upon a termination of Mr. Urban’s employment by the Company for Cause or by Mr. Urban without Good Reason, Mr. Urban will be entitled to the Accrued Amounts (as such term is defined in the Employment Agreement). The Employment Agreement also contains certain non-disclosure covenants that apply during his employment and thereafter.

**2022 Omnibus Incentive Plan - Summary**

In 2014 we established the 2014 Stock Incentive Plan (the “2014 Plan”) and in April 2022 we established the 2022 Omnibus Incentive Plan, collectively (the “Plans”). The Plans were approved by our Board of Directors and stockholders. The purpose of the Plans is to grant stock and options to purchase our common stock, and other incentive awards, to our employees, directors and key consultants. The maximum number of shares of common stock that may be issued pursuant to awards granted under the 2022 Plan is 166,667. Following adoption of the 2022 Plan by our stockholders we only grant incentive awards under the 2022 Plan. The shares of our common stock underlying cancelled and forfeited awards issued under the 2022 Plan may again become available for grant under the 2022 Plan. As of December 31, 2024, there were no shares available for grant under the 2014 Plan. All outstanding incentive stock award grants prior to the adoption of the 2022 Plan were made under the 2014 Plan, and all incentive stock award grants after the adoption of the 2022 Plan have been and will be made under the 2022 Plan. The following table provides information as of December 31, 2024 with respect to the Plans.

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted average exercise price of outstanding options, warrants and rights <sup>(1)</sup> (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by stockholders (2014 Plan)	—		—
Equity compensation plans approved by stockholders (2022 Plan)	150,535	\$ 32.69	16,132
<b>Total</b>	<b>150,535</b>		<b>16,132</b>

(1) The weighted average exercise price excludes restricted stock awards, which have no exercise price.

**Director Compensation**

The following table presents information regarding compensation awarded or paid to our non-employee directors for our fiscal year ended December 31, 2024 for the services rendered by them to the Company in all capacities.

Name	Fees earned or paid in cash (\$)	Stock awards (\$)	Option awards (\$)	Total (\$)
Rajesh Shrotriya, M.D.	81,000	—	—	81,000
Bruce Wendel	81,000	—	—	81,000
Charles J. Casamento	65,000	—	—	65,000

During fiscal 2024, our non-employee directors received annual cash compensation in the amount of \$50,000 for service on our Board of Directors, and annual compensation of \$5,000 per committee for service on our Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee. Non-employee members of the Special Committee of our Board of Directors also received a monthly fee of \$8,000 for service on the Special committee for the months of January and February 2024.

**Indemnification of Directors and Executive Officers and Limitation of Liability**

We have entered into indemnification agreements with each of our current directors and certain key employees. The indemnification agreements, our restated certificate of incorporation and Amended Restated Bylaws require us to indemnify our current and former directors and officers to the fullest extent permitted by Delaware law.

**CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS**

**Transactions with Officers, Directors and greater than 5% stockholders**

Other than listed below, since January 1, 2024, there has not been, nor is there currently proposed, any transaction or series of similar transactions to which we were or will be a party:

- in which the amount involved exceeds the lesser of \$120,000 or one percent of the average of our total assets at year end for the last two completed fiscal years; and
- in which any director, executive officer, stockholder who beneficially owns more than 5% of our common stock or any member of their immediate family had or will have a direct or indirect material interest.

#### Cytovance

In October 2020, the Company entered into a Master Services Agreement with Cytovance Biologics, Inc. (“Cytovance”), to perform biologic development and manufacturing services, and to produce and test compounds used in the Company’s potential product candidates. The Company subsequently executed numerous Statements of Work (“SOWs”) for the research and development of products for use in clinical trials. On August 24, 2022, the Company entered into a Settlement and Investment Agreement with Cytovance that amended existing SOWs and allowed for future invoices to be settled in a combination of cash and issuance of the Company’s common stock. The Agreement also set Cytovance’s beneficial ownership limitation at 4.9% of the issued and outstanding shares of the Company’s common stock. On April 25, 2024, the Company entered into an Amendment to the Settlement and Investment Agreement with Cytovance that increased Cytovance’s beneficial ownership limitation to 9.9% of the issued and outstanding shares of the Company’s common stock. On June 30, 2024, Cytovance became a related party as their beneficial ownership exceeded 5% of the issued and outstanding shares of the Company’s common stock.

During the nine months ended September 30, 2024 and 2023, the Company recognized research and development expenses of \$1,365,000 and \$3,691,000, respectively and made cash payments amounting to \$3,432,000 and \$1,710,000, respectively to Cytovance. In addition, the Company issued 127,597 and 57,437 shares of common stock to Cytovance to settle accounts payable valued at approximately \$810,000 and \$1,120,000, respectively. As of September 30, 2024 the Company’s commitments in relation to unbilled and unaccrued SOWs and any related Change Orders from Cytovance for services that have not yet been rendered as of September 30, 2024, amounted to approximately \$1.3 million. As of September 30, 2024 and December 31, 2023, accounts payable to Cytovance amounted to \$638,000 and \$3,515,000, respectively.

### SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table sets forth certain information, as of January 9, 2025, with respect to the holdings of (1) each person who is the beneficial owner of more than five percent of our common stock, (2) each of our directors, (3) each named executive officer, and (4) all of our directors and executive officers as a group.

Beneficial ownership of our common stock is determined in accordance with the rules of the Securities and Exchange Commission and includes any shares of common stock over which a person exercises sole or shared voting or investment powers, or of which a person has a right to acquire ownership at any time within 60 days of January 9, 2025. Except as otherwise indicated, and subject to applicable community property laws, the persons named in this table have sole voting and investment power with respect to all shares of common stock held by them. The address of each director and officer is 315 Montgomery Street, 10<sup>th</sup> Floor, San Francisco, California 94104. Applicable percentage ownership in the following table is based on 2,234,328 shares of common stock outstanding as of January 9, 2025 plus, for each person, any securities that person has the right to acquire within 60 days of January 9, 2025.

Name of Beneficial Owner	Number of Shares Beneficially Owned	Percentage of Shares Outstanding
<b>Five Percent or Greater Stockholders</b>		
Cytovance Biologics, Inc. <sup>(1)</sup>	219,457	9.8%
Robert A. Marzilli <sup>(2)</sup>	200,000	9.0%
Bristol Investment Fund, Ltd. <sup>(3)</sup>	190,000	7.8%
<b>Executive Officers and Directors:</b>		
Michael Breen <sup>(4)</sup>	46,872	2.1%
Alan Urban <sup>(5)</sup>	4,537	0.2%
Bruce Wendel <sup>(6)</sup>	31,753	1.4%
Rajesh Shrotriya, M.D. <sup>(7)</sup>	32,047	1.4%
Charles J. Casamento <sup>(8)</sup>	16,666	0.7%
Directors and officers as a group (5 persons) <sup>(9)</sup>	131,875	5.7%

(1) The address for Cytovance Biologics, Inc. is 800 Research Parkway, Suite 200 Oklahoma City, OK 73104.

(2) The address for Robert A. Marzilli is 457 Sunset Beach Rd., Richmond Hill, Ontario, L4E 3J3, Canada. This information is based on information known to the company through a non-objecting beneficial ownership report (the “NOBO Report”) as of December 31, 2024. Mr. Marzilli has not provided or verified the information appearing on the NOBO Report, and so this information may not be accurate for a number of reasons, including, but not limited to, if Mr Marzilli has divested such ownership through private contractual or other means not reflected in the NOBO Report, or is the beneficial owner of other shares not disclosed in the NOBO Report.

(3) The address for Bristol Investment Fund, Ltd. is Citco Trustees (Cayman) Limited, 89 Nexus Way, Camana Bay, PO Box 311063, Grand Cayman KY1-1205, Cayman Islands. Includes shares underlying warrants to purchase 190,000 shares of common stock at \$4.35 per share.

(4) Includes shares underlying options to purchase 1,666 shares of common stock at \$74.40 per share, and 16,666 shares of common stock at \$25.50 per share.

(5) Includes shares underlying options to purchase 4,537 shares of common stock at \$2.11 per share.

(6) Consists of shares underlying options to purchase 3,332 shares of common stock at \$74.40 per share, and 16,666 shares of common stock at \$25.50 per share.

(7) Consists of shares underlying options to purchase 15,381 shares of common stock at \$74.40 per share, and 16,666 shares of common stock at \$25.50 per share.

(8) Includes shares underlying options to purchase 16,666 shares of common stock at \$10.50 per share.

(9) Includes shares underlying options to purchase 91,580 shares of common stock.

### DESCRIPTION OF CAPITAL STOCK

The following summary of the rights of our capital stock is not complete and is subject to and qualified in its entirety by reference to our Charter and Bylaws, copies of which are filed as exhibits to our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on March 26, 2024, and the Certificate of Designations and forms of securities, copies of which are filed as exhibits to the registration statement of which this prospectus forms a part, which are incorporated by reference herein.

The following summary describes the material terms of our capital stock. The summary is qualified in its entirety by reference to our certificate of incorporation and our

bylaws.

## Authorized Shares

Our authorized shares consists of 250,000,000 shares of common stock and 15,000,000 shares of preferred stock, \$0.001 par value per share (the "Preferred Stock"). Our common stock is registered under Section 12(b) of the Exchange Act and is listed on the Nasdaq under the trading symbol "GTBP."

On February 2, 2024, the Company effectuated a reverse stock-split of its common stock, par value \$0.001 per share, at a ratio of 1 for 30. The Company's common stock began trading on a reverse stock-split-adjusted basis on The Nasdaq Capital Market on February 5, 2024 under the existing trading symbol "GTBP."

As a result of the reverse stock-split, every thirty (30) shares of issued and outstanding common stock were automatically combined into one issued and outstanding share of common stock, without any change in the par value per share. No fractional shares will be issued in connection with the reverse stock split. Stockholders who otherwise would be entitled to receive fractional shares of common stock will be entitled to receive their pro-rata portion of the net proceeds obtained from the aggregation and sale by the exchange agent of the fractional shares resulting from the reverse stock-split (reduced by any customary brokerage fees, commission and other expenses). The reverse stock split reduced the number of shares of common stock outstanding on the effective date of the reverse stock-split from 41,419,000 shares to 1,380,633 shares, subject to minor adjustments due to the treatment of fractional shares. The number of authorized shares of common stock remains unchanged at 250,000,000 shares.

Proportionate adjustments have been made to the per share exercise price and the number of shares of common stock that may be purchased upon exercise of outstanding stock options and warrants for the Company's common stock, and to the number of shares of common stock reserved for future issuance pursuant to the Company's 2022 Omnibus Incentive Plan.

All share and per share information within this report have been adjusted to retroactively reflect the reverse stock-split as of the earliest period presented.

24

---

## Common Stock

Holders of our common stock are entitled to one vote for each share of common stock held of record for the election of directors and on all matters submitted to a vote of stockholders. Holders of our common stock are entitled to receive dividends ratably, if any, as may be declared by the board of directors out of legally available funds, subject to any preferential dividend rights of any preferred stock then outstanding. In the event of our dissolution, liquidation or winding up, holders of our common stock are entitled to share ratably in our net assets legally available after the payment of all of our debts and other liabilities, subject to the liquidation preferences of any preferred stock then outstanding. Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock currently outstanding or that we may designate and issue in the future. All outstanding shares of our common stock are fully paid and non-assessable. Except as described below in "Anti-Takeover Provisions Under Our Charter and Bylaws and Delaware Law," holders of a majority of the outstanding shares of stock entitled to vote shall constitute a quorum for the transaction of business, and a vote of the majority of the voting power represented at such meeting at which a quorum is generally required to take action under our certificate of incorporation and bylaws.

## Preferred Stock

Our Board is authorized, without action by the stockholders, to designate and issue up to 15,000,000 shares of preferred stock in one or more series. In the past the Board has designated series lettered A through K and issued shares in those series (other than Series K). As of the date of this prospectus, only preferred shares in the series designated C have shares issued and outstanding. Our Board can fix or alter the rights, preferences and privileges of the shares of each series and any of its qualifications, limitations or restrictions, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences and the number of shares constituting a class or series. The issuance of preferred stock could, under certain circumstances, result in one or more of the following adverse effects:

- decreasing the market price of our common stock;
- restricting dividends on our common stock;
- diluting the voting power of our common stock;
- impairing the liquidation rights of our common stock; or
- delaying or preventing a change in control of us without further action by our shareholders.

Our Board will make any determination to issue such shares based on its judgment as to our best interests and the best interests of our stockholders.

### *Series C Preferred Stock*

For a discussion of the terms of our Series C Preferred Stock, see Note 6 to our audited financial statements, *Stockholders' Equity*, incorporated in this document by reference.

## Warrants

Common warrants for the purchase of up to 740,000 shares of common stock (the "2024 Common Warrants") were issued pursuant to a securities purchase agreement between us and certain institutional investors, dated as of May 21, 2024 (the "2024 Purchase Agreement") in registered form and entitle the registered holder to purchase one share of our common stock at a price equal to \$4.35 per share, subject to adjustment as discussed below, terminating at 5:00 p.m., New York City time, on the fifth anniversary of the date of issuance. Also pursuant to the 2024 Purchase Agreement, we had an additional number of outstanding placement agent warrants for the purchase of up to 88,800 shares of common stock at an exercise price of \$5.4375. (the "2024 Placement Agent Warrants," and together with the 2024 Common Warrants, the "2024 Warrants").

25

---

Common warrants to purchase up to an aggregate of 216,667 shares of the Company's common stock (the "2023 Common Warrants"), pre-funded warrants to purchase up to 96,667 shares of the Company's common stock (the "Pre-Funded Warrants"), and placement agent warrants to purchase up to 13,000 of the Company's common stock (the "2023 Placement Agents Warrants," and together with the 2023 Common Warrants and Pre-Funded Warrants, the "2024 Warrants") were issued pursuant to a purchase agreement dated December 30, 2022. The 2023 Common Warrants have an exercise price equal to \$30.00 per share, are exercisable commencing six months following issuance, and have a term of exercise equal to five years following the initial issuance date. The Pre-Funded Warrants had an exercise price of \$0.003 per share, are immediately exercisable and could be exercised at any time after their original issuance until such Pre-Funded Warrants were exercised in full. The 2023 Placement Agents Warrants have an exercise price equal to \$37.50 per share, are exercisable commencing six months following issuance, and have a term of exercise equal to five years following the initial issuance date. The 2023 Shares and 2023 Common Warrants were sold at an offering price of \$30.00 per share and accompanying 2023 Common Warrant and the Pre-Funded Warrants and 2023 Common Warrants were sold at an offering price of \$29.997 per Pre-Funded Warrant and accompanying 2023 Common Warrant.

Holders of 2023 Warrants and 2024 Warrants (together, the “Warrants”) may exercise such warrants on a “cashless” basis if an effective registration statement is not available with respect to the offering of shares of common stock upon exercise of such Warrant. In such event, the Holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the Warrants. The exercise price and number of shares of common stock issuable upon exercise of the Warrants may be adjusted in certain circumstances, including in the event of a stock dividend, extraordinary dividend or recapitalization, reorganization, merger or consolidation. The Warrants may be exercised by delivery of a notice of exercise and the aggregate exercise price (assuming no cashless exercise has been elected if an effective registration statement is not available with respect to the offering of shares of common stock upon exercise of such Warrant) to us as specified in such Warrant. Holders of Warrants do not have the rights or privileges of holders of common stock and any voting rights until they exercise their Warrants and receive shares of common stock. After the issuance of shares of common stock upon exercise of the Warrants, each holder will be entitled to one vote for each share held of record on all matters to be voted on by stockholders.

#### **Anti-Takeover Provisions Under Our Charter and Bylaws and Delaware Law**

Certain provisions of Delaware law, our certificate of incorporation and our bylaws contain provisions that could have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions, which are summarized below, may have the effect of discouraging coercive takeover practices and inadequate takeover bids. These provisions are also designed, in part, to encourage persons seeking to acquire control of us to first negotiate with our Board. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

#### **Amended and Restated Certificate of Incorporation**

*Undesignated Preferred Stock.* Our Board has the ability to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

*Special Meetings of Stockholders.* Our bylaws provide that special meetings of our stockholders may be called only by our Chairman, President or a majority of the entire Board of Directors, thus prohibiting a stockholder from calling a special meeting. This provision might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.

*Board Vacancies Filled Only by Majority of Directors.* Vacancies and newly created seats on our Board may be filled only by a majority of the directors then in office. Only our Board may determine the number of directors on our board. The inability of stockholders to determine the number of directors or to fill vacancies or newly created seats on our Board makes it more difficult to change the composition of our Board, but these provisions promote a continuity of existing management.

26

*No Cumulative Voting.* The DGCL provides that stockholders are not entitled to the right to cumulate votes in the election of directors unless our certificate of incorporation provides otherwise. Our certificate of incorporation and bylaws do not expressly provide for cumulative voting.

*Directors Removed Only by Special Meeting of Stockholders.* A director can be removed only by the affirmative vote of a majority of the votes of the issued and outstanding stock entitled to vote for the election of directors of the corporation given at a special meeting of the stockholders called and held for this purpose.

*Amendment of Charter Provisions.* In order to amend certain of the above provisions in our certificate of incorporation and our bylaws, the Board is expressly authorized to adopt, alter or repeal the bylaws, subject to the rights of the stockholders entitled to vote. Stockholders can vote at any stockholder meeting and repeal, alter, or amend the bylaws by the affirmative vote of a majority of the stockholders entitled to vote in such meeting.

#### **Delaware Anti-takeover Statute**

We are subject to Section 203 of the DGCL. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interest stockholder, unless the business combination is approved in a prescribed manner. A “business combination” includes mergers, asset sales and other transactions in which the interested stockholder receives or could receive a financial benefit on other than a *pro rata* basis with other stockholders. An “interested stockholder” is a person who, together with affiliates and associates, owns, or within three years did own, 15% or more of the corporation’s outstanding voting stock. This provision has an anti-takeover effect with respect to transactions not approved in advance by our Board, including discouraging takeover attempts that might result in a premium over the market price for the shares of our market price. With approval of our stockholders, we could amend our amended and restated certificate of incorporation in the future to avoid the restrictions imposed by this anti-takeover law.

The provisions of Delaware law and our amended and restated certificate of incorporation could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

#### **Transfer Agent and Registrar**

Our transfer agent and registrar for our capital stock is Computershare. The transfer agent’s address is 8742 Lucent Blvd., Suite 225, Highland Ranch, CO 80129, and its telephone number is (303) 262-0600.

#### **Existing Trading Markets**

Our common stock is listed on the Nasdaq Capital Market under the trading symbol “GTBP.” The closing sale price of our common stock on the Nasdaq Capital Market on January 23, 2025, was \$2.38 per share.

#### **Listing on the Nasdaq Capital Market**

Our common stock is listed on the Nasdaq Capital Market under the symbol “GTBP.”

### **DESCRIPTION OF SECURITIES WE ARE OFFERING**

We are offering up to 3,361,344 shares of our common stock (or pre-funded warrants in lieu of) and up to common warrants to purchase up to 3,361,344 shares of common stock. Each share of common stock is being offered together with one common warrant to purchase one share of common stock. We are also offering pre-funded warrants to those purchasers whose purchase of shares of common stock in this offering would result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding shares of common stock following the consummation of this offering in lieu of the shares of common stock that would result in such excess ownership. Each pre-funded warrant will be exercisable for one share of common stock. Each pre-funded warrant is being offered together with one common warrant to purchase one share of common stock. No warrant for fractional shares of common stock will be issued, rather warrants will be issued only for whole shares of common stock. We are also registering the shares of common stock issuable from time to time upon exercise of the pre-funded warrants and common warrants offered hereby.

## Common Stock

The material terms and provisions of our common stock are described under the caption ‘*Description of Capital Stock*’ in this prospectus and are incorporated herein by reference.

## Common Warrants

### *General*

The following is a summary of certain terms and provisions of the common warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the common warrant, the form of which will be filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of common warrant for a complete description of the terms and conditions of the common warrants.

### *Duration, Exercise Price and Form*

Each common warrant offered hereby has an initial exercise price per share equal to \$ . Each common warrant is exercisable for one share of common stock. The common warrants are exercisable immediately following issuance, and have a term of exercise equal to five years following the initial exercise date. The exercise price and number of shares issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The common warrants will be issued in certificated form only.

### *Exercisability*

The common warrants are exercisable immediately after issuance, at the option of each holder, in whole or in part, by delivering to us a duly-executed exercise notice accompanied by payment in full for the number of shares purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of such holder’s common warrants to the extent that the holder would own more than 4.99% (or 9.99%, at the holder’s election) of our outstanding common stock immediately after exercise, except that upon notice from the holder to us, the holder may decrease or increase the limitation of ownership of outstanding stock after exercising the holder’s common warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the common warrants, provided that any increase in such limitation shall not be effective until 61 days following notice to us. No fractional shares will be issued in connection with the exercise of a common warrant. In lieu of fractional shares, we will either pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price or round up to the next whole share.

### *Cashless Exercise*

If, at the time a holder exercises its common warrants, a registration statement registering the issuance of the shares of common stock underlying the common warrants under the Securities Act, is not then effective or available for the resale of such shares, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the common warrant.

## *Fundamental Transactions*

In the event of any fundamental transaction, as described in the common warrants and generally including any merger with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer, or reclassification of our shares of common stock, then upon any subsequent exercise of a common warrant, the holder will have the right to receive as alternative consideration, for each share of common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of common stock for which the common warrant is exercisable immediately prior to such event. In addition, upon a fundamental transaction, the holder will have the right to require us to repurchase its common warrant at its fair value using the Black Scholes option pricing formula in the common warrants; provided, however, that, if the fundamental transaction is not within our control, including not approved by our board of directors, then the holder shall only be entitled to receive the same type or form of consideration (and in the same proportion), at the Black Scholes value of the unexercised portion of the common warrant, that is being offered and paid to the holders of our common stock in connection with the fundamental transaction.

### *Transferability*

Subject to applicable laws, a common warrant may be transferred at the option of the holder upon surrender of the common warrant to us together with the appropriate instruments of transfer.

### *Exchange Listing*

There is no trading market available for the common warrants on any securities exchange or nationally recognized trading system. We do not intend to list the common warrants on any securities exchange or nationally recognized trading system. Without an active market, the liquidity of the common warrants will be limited.

### *Right as a Stockholder*

Except as otherwise provided in the common warrants or by virtue of such holder’s ownership of our common stock, the holders of the common warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their common warrants.

## Pre-Funded Warrants

### *General*

The following is a summary of certain terms and provisions of the pre-funded warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the pre-funded warrant, the form of which will be filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of pre-funded warrant for a complete description of the terms and conditions of the pre-funded warrants.

### *Duration, Exercise Price and Form*

Each pre-funded warrant offered hereby has an initial exercise price per share equal to \$0.0001. Each pre-funded warrant is exercisable for one share of common stock. The pre-funded warrants are exercisable immediately, and will be exercisable until exercised in full. The exercise price and number of shares issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The pre-funded warrants will be issued in certificated form only.

#### *Exercisability*

The pre-funded warrants are exercisable immediately, at the option of each holder, in whole or in part, by delivering to us a duly-executed exercise notice accompanied by payment in full for the number of shares purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of such holder's pre-funded warrants to the extent that the holder would own more than 4.99% (or 9.99%, at the holder's election) of our outstanding common stock immediately after exercise, except that upon notice from the holder to us, the holder may decrease or increase the limitation of ownership of outstanding stock after exercising the holder's pre-funded warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the pre-funded warrants, provided that any increase in such limitation shall not be effective until 61 days following notice to us. No fractional shares will be issued in connection with the exercise of a pre-funded warrant. In lieu of fractional shares, we will either pay the holder an amount in cash equal to the fractional amount multiplied by the exercise price or round up to the next whole share.

#### *Cashless Exercise*

A holder, in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the pre-funded warrant.

#### *Fundamental Transactions*

In the event of any fundamental transaction, as described in the pre-funded warrants and generally including any merger with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer, or reclassification of our shares of common stock, then upon any subsequent exercise of a pre-funded warrant, the holder will have the right to receive as alternative consideration, for each share of common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of common stock for which the pre-funded warrant is exercisable immediately prior to such event.

#### *Transferability*

Subject to applicable laws, a pre-funded warrant may be transferred at the option of the holder upon surrender of the pre-funded warrant to us together with the appropriate instruments of transfer.

#### *Exchange Listing*

There is no trading market available for the pre-funded warrants on any securities exchange or nationally recognized trading system. We do not intend to list the pre-funded warrants on any securities exchange or nationally recognized trading system. Without an active market, the liquidity of the pre-funded warrants will be limited.

#### *Right as a Stockholder*

Except as otherwise provided in the pre-funded warrants or by virtue of such holder's ownership of our common stock, the holders of the pre-funded warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their pre-funded warrants.

### **Placement Agent Warrants**

The following is a summary of certain terms and provisions of the placement agent warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the placement agent warrant, the form of which will be filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of placement agent warrant for a complete description of the terms and conditions of the placement agent warrants.

The placement agent warrants are substantially similar to the common warrants, except that each placement agent warrant will have an exercise price of \$ \_\_\_\_\_ per share (which represents 125% of the public offering price per share of common stock and accompanying common warrants sold in this offering) and will expire five years from the commencement of sales of the offering.

---

### **MATERIAL TAX CONSIDERATIONS**

The following is a discussion of material U.S. federal income tax consequences generally applicable to the acquisition, ownership, and disposition of common stock, common warrants, and pre-funded warrants issued pursuant to this offering. This discussion does not address tax consequences other than those pertaining to U.S. federal income taxation. For example, this discussion does not address any consequences relating to estate or gift taxation, the alternative minimum tax, or the Medicare tax on investment income. Nor does this discussion address any aspects of U.S. state or local or non-U.S. taxation. This discussion applies only to holders that hold our common stock, common warrants, and pre-funded warrants as "capital assets" within the meaning of Section 1221 of the U.S. Internal Revenue Code of 1986, as amended (the "Code"). This discussion does not address all aspects of U.S. federal income taxation that may be relevant to holders in light of their particular circumstances or status, including:

- financial institutions or financial services entities;
- broker-dealers;
- S corporations;
- partnerships (including entities or arrangements treated as partnerships for U.S. federal income tax purposes);
- taxpayers that are subject to the mark-to-market accounting rules;
- tax-exempt entities;
- governments or agencies or instrumentalities thereof;
- insurance companies;

- regulated investment companies or real estate investment trusts;
- expatriates or former long-term residents or citizens of the United States;
- persons for whom our common stock or pre-funded warrants constitute “qualified small business stock” within the meaning of Section 1202 of the Code;
- persons that hold our securities as part of a straddle, constructive sale, hedging, conversion or other integrated or similar transaction;
- persons subject to the alternative minimum tax;
- U.S. persons whose functional currency is not the U.S. dollar;
- controlled foreign corporations;
- accrual method taxpayers that file applicable financial statements as described in Section 451(b) of the Code; or
- passive foreign investment companies.

If a partnership (or any entity or arrangement treated as a partnership for U.S. federal income tax purposes) holds common stock, common warrants, or pre-funded warrants, the tax treatment of such partnership and a person treated as a partner of such partnership will generally depend on the status of the partner and the activities of the partnership. Partnerships holding any common stock, common warrants, or pre-funded warrants, and persons that are treated as partners of such partnerships, should consult their tax advisors.

This discussion is based on the Code, Treasury Regulations promulgated under the Code, and judicial and administrative interpretations thereof, all as of the date hereof. U.S. tax law is subject to change, which change could apply retroactively and could affect the tax considerations described herein. We have not and do not intend to seek any ruling from the U.S. Internal Revenue Service (the “IRS”) regarding any U.S. federal income tax considerations described herein. There can be no assurance that the IRS will not take positions inconsistent with the considerations discussed below or that any such positions would not be sustained by a court.

30

EACH PROSPECTIVE INVESTOR SHOULD CONSULT ITS TAX ADVISOR WITH RESPECT TO THE PARTICULAR TAX CONSEQUENCES TO SUCH PROSPECTIVE INVESTOR OF THE ACQUISITION, OWNERSHIP, AND DISPOSITION OF COMMON STOCK, COMMON WARRANTS, AND PRE-FUNDED WARRANTS, INCLUDING THE EFFECTS OF U.S. FEDERAL, STATE AND LOCAL, AND NON-U.S. TAX LAWS.

#### **CHARACTERIZATION OF COMMON STOCK, COMMON WARRANTS, AND PRE-FUNDED WARRANTS**

##### **Allocation of Purchase Price Between Common Stock, Common Warrants, and Pre-Funded Warrants**

For U.S. federal income tax purposes, each holder that acquires common stock (or pre-funded warrants) and common warrants pursuant to this offering should allocate the purchase price paid by such holder between the underlying common stock or pre-funded warrant (as applicable) and common warrant based on their relative fair market values at the time of issuance. The amount of purchase price allocated to each share of common stock or pre-funded warrant (as applicable) and each common warrant should establish the applicable holder’s initial tax basis in such share of common stock or pre-funded warrant (as applicable) and such common warrant. We do not intend to advise holders with respect to the relative fair market values of common stock, common warrants, and pre-funded warrants. Each holder is accordingly urged to consult its tax advisor with respect to the allocation of purchase price between common stock, common warrants, and pre-funded warrants.

##### **Characterization of Pre-Funded Warrants**

Although the characterization of the pre-funded warrants for U.S. federal income tax purposes is not entirely clear, we intend to take the position that each pre-funded warrant is treated for U.S. federal income tax purposes as a share of our common stock. This is because the exercise price of each pre-funded warrant is a nominal amount equal to \$0.0001. The remainder of this discussion assumes that the characterization of pre-funded warrants described above will be respected for U.S. federal income tax purposes.

#### **U.S. HOLDERS**

As used herein, a “U.S. Holder” is a beneficial owner of our common stock, pre-funded warrant, or common warrant (as applicable) that is, for U.S. federal income tax purposes:

- an individual citizen or resident of the United States,
- a corporation (or other entity that is treated as a corporation for U.S. federal income tax purposes) that is created or organized (or treated as created or organized) in or under the laws of the United States or any state thereof or the District of Columbia,
- an estate whose income is subject to U.S. federal income tax regardless of its source, or
- a trust if (1) a U.S. court can exercise primary supervision over the administration of such trust and one or more U.S. persons have the authority to control all substantial decisions of the trust or (2) it has a valid election in place to be treated as a U.S. person.

##### **Distributions on Our Common Stock**

We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. If we do make distributions with respect to our common stock, a U.S. Holder generally should be required to include in gross income as a dividend the amount of any cash distribution or the fair market value of any other property distributed with respect to shares of our common stock, to the extent the distribution is paid out of our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Amounts treated as a dividend that we pay to a U.S. Holder that is a taxable corporation may qualify for a dividends received deduction, provided certain holding period and other requirements are satisfied. Amounts treated as a dividend that we pay to a non-corporate U.S. Holder may be taxed as “qualified dividend income” at preferential tax rates accorded to long-term capital gains, subject to certain exceptions and provided certain holding period and other requirements are satisfied. Distributions in excess of current and accumulated earnings and profits should generally constitute a return of capital that is applied against and that reduces (not below zero) the U.S. Holder’s adjusted tax basis in its shares of our common stock. Any remaining excess should generally be treated as gain realized on the sale or other disposition of our common stock and should generally be treated as described below under “—U.S. Holders—Sale, Exchange, or Other Taxable Disposition of Our Common Stock, Pre-Funded Warrants, or Common Warrants”

31

## Sale, Exchange, or Other Taxable Disposition of Our Common Stock, Pre-Funded Warrants, or Common Warrants

Upon a sale, exchange, or other taxable disposition of our common stock, pre-funded warrants, or common warrants, a U.S. Holder generally should recognize capital gain or loss equal to the difference between the amount realized on such sale, exchange, or other taxable disposition and the U.S. Holder's adjusted tax basis in the applicable shares of our common stock, pre-funded warrants, or common warrants. Any such capital gain or loss generally should be long-term capital gain or loss if the U.S. Holder's holding period for the shares of our common stock, pre-funded warrants, or common warrants so disposed of exceeds one year. Long-term capital gains recognized by non-corporate U.S. Holders may be eligible to be taxed at reduced rates. The deductibility of capital losses is subject to limitations.

### Exercise of a Pre-Funded Warrant

As described in “—*Characterization of Common Stock, Common Warrants, and Pre-Funded Warrants—Characterization of Pre-Funded Warrants*” above, we intend to take the position that each pre-funded warrant is treated for U.S. federal income tax purposes as a share of our common stock. Based on this characterization, a U.S. Holder generally should not recognize taxable gain or loss as a result of the acquisition of shares of our common stock upon exercise of a pre-funded warrant for its nominal exercise price. The U.S. Holder's tax basis in the share of our common stock received upon exercise of the pre-funded warrant should be an amount equal to the sum of the U.S. Holder's tax basis in the pre-funded warrant and the nominal exercise price of such pre-funded warrant. The U.S. Holder's holding period in the share of our common stock received upon exercise of the pre-funded warrant should include the U.S. Holder's holding period for the pre-funded warrant.

### Exercise or Lapse of a Common Warrant

A U.S. Holder generally should not recognize taxable gain or loss as a result of the acquisition of shares of our common stock upon exercise of a common warrant for cash in the amount of its exercise price. The U.S. Holder's tax basis in the share of our common stock received upon exercise of the common warrant generally should be an amount equal to the sum of the U.S. Holder's tax basis in the common warrant and the exercise price of such common warrant. It is unclear whether a U.S. Holder's holding period for the shares of our common stock received upon exercise of the common warrant will commence on the date of exercise of the common warrant or the day following the date of exercise of the common warrant. In either case, the holding period should not include the period during which the U.S. Holder held the common warrant. If a common warrant is allowed to lapse unexercised, a U.S. Holder generally should recognize a capital loss equal to such U.S. Holder's tax basis in the common warrant. The deductibility of capital losses is subject to limitations.

The U.S. federal income tax treatment of a cashless exercise of common warrants is unclear under current law and could differ from the treatment described above. A cashless exercise could be considered a taxable event. U.S. Holders are urged to consult their own tax advisors regarding the cashless exercise of a common warrant and the U.S. federal income tax treatment thereof.

32

## Possible Constructive Distributions

The terms of each common warrant provide in certain circumstances for an adjustment to the exercise price of the common warrant or an increase in the shares of our common stock issuable upon exercise. An adjustment made pursuant to a bona fide, reasonable, adjustment formula which has the effect of preventing dilution generally is not taxable. The U.S. Holders of the common warrant would, however, be treated as receiving a constructive distribution from us if, for example, the adjustment increases the U.S. Holder's proportionate interest in our assets or earnings and profits (e.g., through a decrease to the exercise price or an increase in the number of shares of our common stock that would be obtained upon exercise) as a result of a distribution of cash or other property with respect to shares of our common stock. Such a constructive distribution to a U.S. Holder of common warrant would generally be treated as if such U.S. Holder had received a cash distribution from us in an amount equal to the fair market value of such increased interest, taxed under principles similar to those described in “—*U.S. Holders—Distributions on Our Common Stock*.” The rules governing constructive distributions as a result of certain adjustments with respect to a common warrant are complex. U.S. Holders are urged to consult their tax advisors on the potential existence and tax consequences of any such constructive distribution with respect to a common warrant.

## Information Reporting and Backup Withholding

U.S. backup withholding and information reporting requirements may apply to distributions on our common stock, constructive distributions on common warrants, and the receipt of proceeds from the sale, exchange, or other disposition of our common stock, pre-funded warrants, or common warrants. Backup withholding generally should not apply, however, to a U.S. Holder who furnishes a correct taxpayer identification number and makes other required certifications, or who is otherwise exempt from backup withholding and establishes such exempt status. Backup withholding is not an additional tax. Amounts withheld as backup withholding may be credited against a U.S. Holder's U.S. federal income tax liability, and a U.S. Holder generally may obtain a refund of any excess amounts withheld under the backup withholding rules by timely filing the appropriate claim for refund with the IRS and furnishing any required information.

## NON-U.S. HOLDERS

As used herein, a “non-U.S. Holder” is a beneficial owner of our common stock, pre-funded warrant, or common warrant (as applicable) that, for U.S. federal income tax purposes, is or is treated as an individual, corporation, estate or trust that is not a U.S. Holder.

### Distributions on Our Common Stock

We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. If we do make distributions with respect to our common stock, any such distribution made to a non-U.S. Holder with respect to our common stock should generally constitute a dividend for U.S. federal income tax purposes to the extent paid out of our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. Provided that any such dividend is not effectively connected with such non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, attributable to a U.S. permanent establishment or fixed base maintained by such non-U.S. Holder), and subject to the discussion below regarding backup withholding and FATCA (defined below), such dividend should generally be subject to withholding tax from the gross amount of the dividend at a rate of 30%, unless such non-U.S. Holder is eligible for a reduced rate of withholding tax under an applicable income tax treaty and provides proper certification of its eligibility for such reduced rate (usually on an IRS Form W-8BEN or W-8BEN-E, as applicable). Any distribution not constituting a dividend should generally be treated first as reducing (not below zero) the non-U.S. Holder's adjusted tax basis in our common stock and then, to the extent such distribution exceeds the non-U.S. Holder's adjusted tax basis, as gain realized from the sale or other disposition of our common stock, which should generally be treated as described below under “—*Non-U.S. Holders—Sale, Exchange or Other Taxable Disposition of Our Common Stock, Pre-Funded Warrants, or Common Warrants*.”

Dividends paid by us to a non-U.S. Holder that are effectively connected with such non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, attributable to a U.S. permanent establishment or fixed base maintained by such non-U.S. Holder) should generally not be subject to U.S. withholding tax, provided such non-U.S. Holder complies with certain certification and disclosure requirements (usually by providing an IRS Form W-8ECI). Instead, such dividends should generally be subject to U.S. federal income tax, net of certain deductions, at the same graduated individual or corporate rates applicable to U.S. Holders. If the non-U.S. Holder is a corporation, dividends that are effectively connected income may also be subject to a “branch profits tax” at a rate of 30% (or such lower rate as may be specified by an applicable income tax treaty).

33



## Sale, Exchange, or Other Taxable Disposition of Our Common Stock, Pre-Funded Warrants, or Common Warrants

Subject to the discussion below regarding backup withholding and FATCA, a non-U.S. Holder generally should not be subject to U.S. federal income tax on gain realized from a sale, exchange, or other disposition of our common stock, pre-funded warrants, or common warrants unless:

- (i) such non-U.S. Holder is an individual who was present in the United States for 183 days or more in the taxable year of such disposition and certain other requirements are met, in which case any gain realized will generally be subject to a flat 30% U.S. federal income tax;
- (ii) the gain is effectively connected with a trade or business of such non-U.S. Holder in the United States (and, if required by an applicable income tax treaty, attributable to a U.S. permanent establishment or fixed base maintained by such non-U.S. Holder), in which case such gain will be subject to U.S. federal income tax, net of certain deductions, at the same graduated individual or corporate rates applicable to U.S. Holders, and any such gain of a non-U.S. Holder that is a corporation may be subject to an additional “branch profits tax” at a rate of 30% (or such lower rate as may be specified by an applicable income tax treaty); or
- (iii) subject to certain exceptions discussed below, we are or have been a U.S. real property holding corporation (a “USRPHC”) at any time during the shorter of the five-year period preceding such disposition and such non-U.S. Holder’s holding period, in which case (a) gain recognized by such non-U.S. holder on the sale, exchange, or other disposition of our common stock, pre-funded warrants, or common warrants should generally be subject to tax at generally applicable U.S. federal income tax rates and (b) a buyer of our common stock, pre-funded warrants, or common warrants from such non-U.S. Holder may be required to withhold U.S. federal income tax at a rate of 15% of the amount realized upon such disposition.

For purposes of item (iii) immediately above, we will generally be classified as a USRPHC if the fair market value of our “United States real property interests” equals or exceeds 50% of the sum of the fair market value of our worldwide real property interests and our other assets used or held for use in a trade or business, as determined for U.S. federal income tax purposes. Although there can be no assurance, we believe that we are not currently a USRPHC and we do not anticipate becoming a USRPHC. Even if we are or become a USRPHC, a non-US Holder should generally not be subject to U.S. federal income tax under the rules discussed in item (iii) with respect to gain realized on a sale or other disposition of our common stock if (A) our common stock is considered to be regularly traded on an established securities market and (B) such non-U.S. Holder has not owned and is not deemed to have owned more than 5% of our common stock at any time during the shorter of the five-year period preceding such disposition and such non-U.S. Holder’s holding period. There can be no assurance that shares of our common stock qualify as regularly traded on an established securities market for purposes of these rules.

### Exercise of a Pre-Funded Warrant

The U.S. federal income tax treatment of a non-U.S. Holder’s exercise of a pre-funded warrant generally should correspond to the U.S. federal income tax treatment of the exercise of a pre-funded warrant held by a U.S. Holder, as described above under “—U.S. Holders—Exercise of a Pre-Funded Warrant.”

### Exercise or Lapse of a Common Warrant

The U.S. federal income tax treatment of a non-U.S. Holder’s exercise of a common warrant generally should correspond to the U.S. federal income tax treatment of the exercise of a common warrant held by a U.S. Holder, as described above under “—U.S. Holders—Exercise or Lapse of a Common Warrant.” If a common warrant is allowed to lapse unexercised, a non-U.S. Holder generally should recognize a loss equal to such non-U.S. Holder’s tax basis in the common warrant. However, subject to additional conditions and restrictions, a non-U.S. Holder generally cannot utilize a loss recognized upon expiration of a common warrant to reduce the non-U.S. Holder’s U.S. federal income tax liability unless the loss is effectively connected with the non-U.S. Holder’s conduct of a trade or business within the United States (and, if an income tax treaty applies, is attributable to a U.S. permanent establishment or fixed base maintained by the non-U.S. Holder) or if the loss is treated as U.S.-source and incurred by a non-U.S. Holder that is an individual during a taxable year in which the non-U.S. Holder is present in the United States for at least 183 days.

The U.S. federal income tax treatment of a cashless exercise of common warrants is unclear under current law and could differ from the considerations described above. A cashless exercise could be considered a taxable event. Non-U.S. Holders are urged to consult their own tax advisors regarding any cashless exercise of a common warrant and the U.S. federal income tax treatment thereof.

### Possible Constructive Distributions

As described above under “—U.S. Holders—Possible Constructive Distributions,” certain adjustments with respect to the common warrants may give rise to a constructive distribution, the consequences of which to a non-U.S. Holder would be similar to those described above under “—Non-U.S. Holders—Distributions on Our Common Stock.”

### Information Reporting and Backup Withholding

U.S. backup withholding and information reporting requirements may apply to distributions on our common stock, constructive distributions on common warrants, and the receipt of proceeds from the sale or disposition of our common stock, pre-funded warrants, or common warrants. A non-U.S. Holder may have to comply with certification procedures to establish that it is not a U.S. person for U.S. federal income tax purposes, to otherwise establish an exemption from information reporting and backup withholding requirements, or to claim a reduced rate of withholding under an applicable income tax treaty. Backup withholding is not an additional tax. Amounts withheld as backup withholding may be credited against a non-U.S. Holder’s U.S. federal income tax liability, and a non-U.S. Holder generally may obtain a refund of any excess amounts withheld under the backup withholding rules by timely filing the appropriate claim for refund with the IRS and furnishing any required information.

### Foreign Account Tax Compliance Act

Sections 1471 through 1474 of the Code and the Treasury Regulations and administrative guidance promulgated thereunder (commonly referred as the “Foreign Account Tax Compliance Act” or “FATCA”) generally impose withholding at a rate of 30% in certain circumstances on dividends in respect of securities (including our common stock), and (subject to the proposed Treasury Regulations discussed below) the gross proceeds derived from the sale or other disposition of our common stock, which are held by or through certain foreign financial institutions (including investment funds), unless any such institution (i) enters into, and complies with, an agreement with the IRS to, among other things, comply with specified due diligence, report, on an annual basis, information with respect to interests in, and accounts maintained by, the institution that are owned by certain U.S. persons and by certain non-U.S. entities that are wholly or partially owned by U.S. persons and to withhold on certain payments, or (ii) if allowed under an intergovernmental agreement between the United States and an applicable foreign country, reports such information to its local tax authority, which may exchange such information with the U.S. authorities. An intergovernmental agreement between the United States and an applicable foreign country may modify these requirements. Accordingly, the disclosure of the ownership of the entity through which our securities (including our common stock, pre-funded warrants, and common warrants) is held will affect the determination of whether such withholding and reporting is required. Withholding agents may, however, rely on proposed U.S. Treasury Regulations that would no longer require FATCA withholding on payments of gross proceeds. A withholding agent, and not GT BIOPHARMA, INC., will determine whether or not to implement gross proceeds FATCA withholding. Similarly, dividends in respect of our common stock held by an investor that is a non-financial non-U.S. entity that does not qualify under certain exceptions will generally be subject to withholding at a rate of 30%, unless such entity either (i) certifies to the applicable withholding agent that such entity does not have any “substantial United States owners” or (ii) provides certain information regarding the entity’s “substantial United States owners,” which may in turn be provided to the

## PLAN OF DISTRIBUTION

We engaged Roth Capital Partners, LLC (“Roth” or the “placement agent”), to act as our exclusive placement agent to solicit offers to purchase the securities offered by this prospectus on a reasonable best efforts basis subject to the terms and conditions of the placement agency agreement dated \_\_\_\_\_, 2025. Roth is not purchasing or selling any securities, nor are they required to arrange for the purchase and sale of any specific number or dollar amount of securities, other than to use their “reasonable best efforts” to arrange for the sale of the securities by us. Therefore, we may not sell the entire amount of securities being offered. There is no minimum amount of proceeds that is a condition to closing of this offering. The placement agent does not guarantee that it will be able to raise new capital in this offering. The terms of this offering were subject to market conditions and negotiations between us and prospective investors in consultation with the placement agent. The placement agent will have no authority to bind us. This offering will terminate no later than February 28, 2025, unless we decide to terminate the offering (which we may do at any time in our discretion) prior to that date. We will have one closing for all the securities purchased in this offering. The combined public offering price per share (or pre-funded warrant) and accompanying common warrant will be fixed for the duration of this offering. Roth may engage one or more sub-placement agents or selected dealers to assist with the offering.

We will enter into a securities purchase agreement directly with the institutional investors, at the investor’s option, who purchase our securities in this offering. Investors who do not enter into a securities purchase agreement shall rely solely on this prospectus in connection with the purchase of our securities in this offering.

### Placement Agent Fees and Expenses

The following table shows the per share and accompanying common warrants, and per pre-funded warrant and accompanying common warrants, and total placement agent fees we will pay in connection with the sale of the securities in this offering.

	Per Share and Common Warrant	Per Pre-Funded Warrant and Common Warrant	Total
Public offering price	\$	\$	\$
Placement Agent fees <sup>(1)</sup>	\$	\$	\$
Proceeds to us, before expenses <sup>(2)</sup>	\$	\$	\$

(1) Includes a cash fee up to 6% of the gross proceeds raised in this offering; provided, however, the cash fee shall equal 3% of the gross proceeds raised in this offering for securities purchased by certain excluded investors, to be paid to the placement agent. We have also agreed to reimburse the placement agent for certain of its offering-related expenses in an aggregate amount up to \$100,000. In addition, we have agreed to issue the placement agent or its designees warrants to purchase up to \_\_\_\_\_ shares of common stock (equal to 6% of the aggregate number of shares of common stock and pre-funded warrants sold in this offering, subject to a partial adjustment in the event certain investors participate) at an exercise price of \$ \_\_\_\_\_ per share, which represents 125% of the public offering price per share of common stock and common warrants. We refer to these warrants in this prospectus as the “placement agent warrants.”

(2) Because there is no minimum number of securities or amount of proceeds required as a condition to closing in this offering, the actual public offering amount, placement agent fees, and proceeds to us, if any, are not presently determinable and may be substantially less than the total maximum offering amounts set forth above.

We estimate that the total expenses of the offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding placement agent fees, will be approximately \$390,531, all of which are payable by us. This figure includes the placement agent’s accountable expenses, including, but not limited to, legal fees for placement agent’s legal counsel, that we have agreed to pay at the closing of the offering up to an aggregate expense reimbursement of \$100,000.

### Placement Agent Warrants

In addition, we have agreed to issue to the placement agent, or its designees, warrants to purchase up to 201,680 shares of common stock (equal to 6% of the aggregate number of shares of common stock and pre-funded warrants sold in this offering, subject to a partial adjustment in the event certain investors participate) at an exercise price of \$ \_\_\_\_\_ per share, which represents 125% of the public offering price per share of common stock and accompanying common warrant, and exercisable for five years from the date of the commencement of sales in this offering. We refer to these warrants in this prospectus as the “placement agent warrants.” The placement agent warrants are in substantially similar form to the common warrants being issued to investors as part of this offering other than as described herein. The placement agent warrants and underlying shares of common stock are registered on the registration statement of which this prospectus is a part. The form of the placement agent warrant will be included as an exhibit to this registration statement of which this prospectus forms a part.

### Other Relationships

The placement agent may, from time to time, engage in transactions with or perform services for us in the ordinary course of its business and may continue to receive compensation from us for such services.

### Determination of Offering Price

The combined public offering price per share and common warrant and the combined public offering price per pre-funded warrant and common warrant we are offering and the exercise prices and other terms of the warrants were negotiated between us and the investors, in consultation with the placement agent based on the trading of our common stock prior to this offering, among other things. Other factors considered in determining the public offering prices of the securities we are offering and the exercise prices and other terms of the warrants include the history and prospects of our company, the stage of development of our business, our business plans for the future and the extent to which they have been implemented, an assessment of our management, general conditions of the securities markets at the time of the offering and such other factors as were deemed relevant.

### Transfer Agent and Registrar

Our transfer agent and registrar for our capital stock is Computershare. The transfer agent’s address is 8742 Lucent Blvd., Suite 225, Highland Ranch, CO 80129, and its telephone number is (303) 262-0600.

## The Nasdaq Capital Market Listing

Our common stock is currently listed on the Nasdaq Stock Market LLC under the symbol “GTBP.” On January 23, 2025, the reported closing price per share of our common stock was \$2.38. The final public offering price will be determined between us, the placement agent and the investors in the offering, and may be at a discount to the current market price of our common stock. Therefore, the assumed public offering price used throughout this prospectus may not be indicative of the final public offering price. There is no established public trading market for the common warrants or pre-funded warrants, and we do not expect such markets to develop. In addition, we do not intend to apply for a listing of the common warrants or pre-funded warrants on any national securities exchange or other nationally recognized trading system.

### Indemnification

We have agreed to indemnify the placement agent against certain liabilities, including certain liabilities arising under the Securities Act, or to contribute to payments that the placement agent may be required to make for these liabilities.

### Lock-up Restrictions

We have agreed for a period of sixty days following the closing of this offering not to issue, enter into an agreement to issue or announce the issuance or proposed issuance of shares of our common stock or any other securities convertible into, or exercisable or exchangeable for, shares of common stock or file any registration statement or amendment or supplement thereto, subject to limited exceptions. This agreement does not apply to, in addition to certain customary exceptions, the issuance by us of equity or debt securities pursuant to acquisitions or strategic transactions approved by a majority of our disinterested directors, where not for the purpose of raising capital, provided that, in each case, such securities are issued as “restricted securities” (as defined in Rule 144 under the Securities Act), and carry no registration rights that require or permit the filing of any registration statement in connection therewith during the sixty day lock-up period.

We have also agreed for a period of one year following the closing date of this offering not to (i) issue or agree to issue equity or debt securities convertible into, or exercisable or exchangeable for, shares at a conversion price, exercise price or exchange price which floats with the trading price of our shares or which may be adjusted after issuance upon the occurrence of certain events or (ii) enter into any agreement, including an equity line of credit, whereby we may issue securities at a future-determined price, subject to certain conditions and exceptions.

Our directors, executive officers and certain stockholders have also entered into customary lock-up agreements. Under these agreements, these individuals have agreed, subject to specified exceptions, not to sell or transfer any shares of common stock or securities convertible, exchangeable or exercisable into, shares of our common stock during a period ending sixty days after the closing of this offering.

The placement agent may waive these prohibitions in its sole discretion and without notice.

### Regulation M

The placement agent may be deemed to be an underwriter within the meaning of Section 2(a)(11) of the Securities Act and any fees received by it and any profit realized on the sale of the securities 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 of 1934, as amended (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.

### Electronic Distribution

A prospectus in electronic format may be made available on a website maintained by the placement agent and the placement agent may distribute prospectuses electronically. Other than the prospectus in electronic format, the information on these websites is not part of this prospectus or the registration statement of which this prospectus forms a part, has not been approved and/or endorsed by us or the placement agent and should not be relied upon by investors.

### INCORPORATION OF CERTAIN INFORMATION 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 those documents instead of having to repeat the information in this prospectus. The information incorporated by reference is considered to be part of this prospectus, and because we are a smaller reporting company, later information that we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings (including those made after the initial filing of the registration statement of which this prospectus is a part and prior to the effectiveness of such registration statement) we will make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act until the termination of the offering of the shares covered by this prospectus (other than information furnished under Item 2.02 or Item 7.01 of Form 8-K):

- our Annual Report on Form 10-K for the year ended December 31, 2023 filed with the SEC on [March 26, 2024](#);
- our Quarterly Report on Form 10-Q for the quarter ended March 31, June 30 and September 30, 2024, filed with the SEC on [May 15, 2024](#), [August 14, 2024](#), and [November 14, 2024](#), respectively;
- our definitive proxy statement on Schedule 14A, filed with the SEC on [April 29, 2024](#);
- our Current Reports on Form 8-K filed with the SEC on [February 1, 2024](#), [April 30, 2024](#), [May 23, 2024](#), [June 7, 2024](#), [June 26, 2024](#), [June 27, 2024](#); [September 16, 2024](#), [November 21, 2024](#), [November 27, 2024](#), and [January 27, 2025](#); and
- the description of our common stock contained in [Exhibit 4.3](#) to our Annual Report on Form 10-K for the year ended December 31, 2023 filed with the SEC on March 26, 2024, including any amendment or report filed for the purpose of updating such description.

All documents the Company subsequently filed with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, except as to any portion of any report or documents that is not deemed filed under such provisions, (1) on or after the date of filing of the registration statement containing this prospectus and prior to the effectiveness of the registration statement and (2) on or after the date of this prospectus until the earlier of the date on which all of the securities registered hereunder have been sold or the registration statement of which this prospectus is a part has been withdrawn, shall be deemed incorporated by reference in this prospectus and to be a part of this prospectus from the date of filing of those documents and will be automatically updated and, to the extent described above, supersede information contained or incorporated by reference in this prospectus and previously filed documents that are incorporated by reference in this prospectus. Any statements contained in a previously filed document incorporated by reference into this prospectus is deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, or in a subsequently filed document also incorporated by reference herein, modifies or supersedes that statement.

Nothing in this prospectus shall be deemed to incorporate information furnished but not filed with the SEC pursuant to Item 2.02, 7.01 or 9.01 of Form 8-K.

Upon written or oral request, we will provide without charge to each person to whom a copy of the prospectus is delivered a copy of the documents incorporated by reference herein (other than exhibits to such documents, unless such exhibits are specifically incorporated by reference herein). You may request a copy of these filings, at no cost, by contacting GT Biopharma, Inc.

We maintain a website at <https://ir.gtbiopharma.com>. You may access our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and other reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act with the SEC free of charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC.

39

There have been no material changes to the Company's affairs that have occurred since December 31, 2023 that have not been described in a Form 10-Q or Form 8-K filed under the Exchange Act.

#### WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-1 under the Securities Act with the SEC with respect to this offering. This prospectus was filed as a part of that registration statement but does not contain all of the information contained in the registration statement and exhibits. Reference is thus made to the omitted information. Statements made in this prospectus are summaries of the material terms of contracts, agreements and documents and are not necessarily complete; however, all information we considered material has been disclosed. Reference is made to each exhibit for a more complete description of the matters involved and these statements are qualified in their entirety by the reference. You can find, copy and inspect information we file at the SEC's public reference room, which is located at 100 F Street, N.E., Washington, DC 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the SEC's public reference room. The SEC also maintains a web site (<http://www.sec.gov>) that contains this filed registration statement, reports and other information regarding us that we have filed electronically with the SEC. For more information pertaining to our company and this offering, reference is made to the registration statement.

#### LEGAL MATTERS

The validity of the securities offered hereby will be passed upon for us by Baker & McKenzie LLP, Dallas, Texas. The placement agent is being represented by Ellenoff Grossman & Schole LLP, New York, New York.

#### EXPERTS

The financial statements of GT Biopharma, Inc. at December 31, 2023, and for the year in the period ending December 31, 2023, incorporated by reference into this prospectus, have been audited by Weinberg & Company, P.A., an independent registered public accounting firm, and the financial statements of GT Biopharma, Inc. at December 31, 2023, and for the year in the period ending December 31, 2023, incorporated by reference into this prospectus, have been audited by Weinberg & Company, P.A., each as set forth in their report thereon incorporated by reference herein, and are included in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

40

#### Up to 3,361,344 Shares of Common Stock

Pre-Funded Warrants to Purchase up to 3,361,344 Shares of Common Stock

Common Warrants to Purchase up to 3,361,344 Shares of Common Stock

Placement Agent Warrants to Purchase up to 201,680 Shares of Common Stock

Up to 6,924,368 Shares of Common Stock underlying Pre-Funded Warrants,  
Common Warrants and Placement Agent Warrants



#### PRELIMINARY PROSPECTUS

## Roth Capital Partners

The date of this prospectus is \_\_\_\_\_, 2025.

41

#### PART II

#### INFORMATION NOT REQUIRED IN PROSPECTUS

##### Item 13. Other Expenses of Issuance and Distributions

The following table indicates the expenses to be incurred in connection with the offering described in this registration statement, other than underwriting discounts and commissions, all of which will be paid by us. All amounts are estimated except the Securities and Exchange Commission registration fee.

SEC registration fee	\$	2,541
FINRA filing fee	\$	2,990
Accounting fees and expenses	\$	35,000
Legal fees and expenses	\$	350,000
Miscellaneous	\$	*
Total	\$	<u>390,531</u>

#### Item 14. Indemnification of Directors and Officers

Section 145 of the DGCL provides that a corporation may indemnify directors and officers as well as other employees and individuals against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any threatened, pending or completed actions, suits or proceedings in which such person is made a party by reason of such person being or having been a director, officer, employee or agent to us. The DGCL provides that Section 145 is not exclusive of other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise. Our certificate of incorporation provides for indemnification by us of our directors, officers and employees to the fullest extent permitted by the DGCL.

Section 102(b)(7) of the DGCL permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases, redemptions or other distributions or (iv) for any transaction from which the director derived an improper personal benefit. Our certificate of incorporation provides for such limitation of liability.

#### Item 15. Recent Sales of Unregistered Securities

Since December 2021, the Company made the following issuances of its unregistered securities pursuant exemptions contained in Section 4(a)(2) or 3(a)(9) of the Securities Act and/or Rule 506 of Regulation D promulgated thereunder:

42

- On August 24, 2022, the Company entered into a revised agreement with this third-party manufacturer and issued 40,742 shares of common stock with a fair value of approximately \$3.2 million as part of a payment arrangement.
- During the year ended December 31, 2022, the Company issued 11,257 shares of common stock upon conversion of notes payable.
- During the year ended December 31, 2022, the Company issued 23,654 shares of common stock to officers, employees, and board of directors with a fair value of approximate \$2.5 million. This included 12,602 shares with a fair value of \$938,000 that were granted during the year.
- During the year ended December 31, 2022, the Company issued 17,562 shares of common stock to consultants with a fair value of approximately \$2.1 million.
- During the year ended December 31, 2022, the Company issued 57,437 shares of common stock to settle approximately \$700,000 of vendor payables.
- During the year ended December 31, 2023, the Company issued 14,237 shares of common stock to officers, employees, and board of directors with a fair value of approximate \$267,000. This included 13,333 shares with a fair value of \$115,000 that were granted during the year.
- During the year ended December 31, 2023, the Company issued 1,545 shares of common stock to consultants with a fair value of approximately \$162,000.
- On January 4, 2023, the Company entered into a purchase agreement signed on December 30, 2022, between the Company and an institutional investor for the issuance and sale, in a registered direct offering of 120,000 shares of the Company's common stock, pre-funded warrants to purchase up to 96,667 shares of the Company's common stock, warrants to purchase up to an aggregate of 216,667 shares of the Company's common stock and placement agent warrants to purchase up to 13,000 of the Company's common stock. The Company raised \$6.5 million from the offering.
- On April 30, 2024, the Company issued 36,018 shares of common stock to settle \$278,500 of vendor accounts payable. The shares were valued at the month-end closing price of the Company's common stock for the months for which services were provided by the vendor.
- On May 23, 2024, the Company issued 740,000 common warrants, each to purchase one share of common stock at an exercise price equal to \$4.35 and are exercisable immediately upon issuance and will expire on the date that is five years following the date of issuance.
- On May 23, 2024, the Company issued placement agent warrants to the placement agent to purchase up to 88,800 shares of common stock as part of the compensation payable to the placement agent in connection with such offering at an exercise price of \$5.4375 per share and will expire five years from the commencement of sales of the offering.
- On June 30, 2024, the Company issued 91,579 shares of common stock to settle \$531,300 of vendor accounts payable. The shares were valued at the month-end closing price of the Company's common stock for the months for which services were provided by the vendor.
- Since December 2021, we have issued 29,935 shares of common stock with a fair value of approximately \$1,053,000 in connection with compensation of the Company's officers and directors.

43

#### Item 16. Exhibits and Financial Statement Schedules

(a) Exhibits

##### Exhibit Index

Exhibit Number	Exhibit Description	Form	Date	Number	File No.	Filed Herewith
3.1	<a href="#">Restated Certificate of Incorporation as filed in Delaware September 10, 1996 and as thereafter amended through March 1, 2002</a>	10-KSB	04/01/02	3.A		
3.2	<a href="#">Certificate of Amendment to the Restated Certificate of Incorporation of GT Biopharma, Inc., dated February 9, 2011</a>	10-K	03/31/2011	3.2		
3.3	<a href="#">Certificate of Amendment to the Restated Certificate of Incorporation of GT Biopharma, Inc., effective as of July 19, 2017</a>	8-K/A	03/15/2018	3.1		
3.4	<a href="#">Certificate of Amendment to the Restated Certificate of Incorporation of GT Biopharma, Inc., effective as of February 10, 2021</a>	8-K	02/11/2021	3.1		
3.5	<a href="#">Certificate of Amendment to the Restated Certificate of Incorporation of GT Biopharma, Inc., effective June 13, 2022</a>	10-K	03/30/2023	3.5		

3.6	<a href="#">Amended and Restated Bylaws of GT Biopharma, Inc., effective November 3, 2022</a>	8-K	11/09/2022	3.1
3.7	<a href="#">Certificate of Amendment of Restated Certificate of Incorporation of GT Biopharma, Inc., effective February 1, 2024</a>	8-K	02/01/2024	3.1
4.1	<a href="#">Certificate of Designation of Preferences, Rights and Limitations of Series J-1 Preferred Stock of GT Biopharma, Inc., dated April 3, 2019</a>	8-K	04/04/2019	3.1
4.2	<a href="#">Certificate of Designation of Preferences, Rights and Limitations of Series K Preferred Stock of GT Biopharma, Inc., dated February 22, 2021</a>	10-K	04/16/2021	4.2
4.3	<a href="#">Description of the Registrant's Securities Registered pursuant to Section 12 of the Securities Exchange Act of 1934, as Amended</a>	10-K	03/30/2023	4.3
4.4	<a href="#">Form of 10% Senior Convertible Debenture (related to Securities Purchase Agreement, dated January 9, 2017)</a>	8-K	01/13/2017	10.2
4.5	<a href="#">Form of Common Stock Purchase Warrant (related to Securities Purchase Agreement, dated January 9, 2017)</a>	8-K	01/13/2017	10.3
4.6	<a href="#">Registration Rights Agreement, dated January 22, 2018, among GT Biopharma, Inc. and the buyers named therein</a>	8-K	01/23/2018	10.2
4.7	<a href="#">Form of Senior Convertible Note (related to Securities Purchase Agreement, dated January 22, 2018)</a>	8-K	01/23/2018	10.3
4.8	<a href="#">Form of Warrant to Purchase Common Stock (related to Securities Purchase Agreement, dated January 22, 2018)</a>	8-K	01/23/2018	10.4
4.9	<a href="#">Form of 10% Senior Convertible Debenture (related to Securities Purchase Agreement, dated August 2, 2018)</a>	8-K	08/03/2018	4.1
4.10	<a href="#">Form of 10% Senior Convertible Debenture (related to Securities Purchase Agreement, dated September 7, 2018)</a>	8-K	09/07/2018	4.1
4.11	<a href="#">Form of 10% Senior Convertible Debenture (related to Securities Purchase Agreement, dated September 24, 2018)</a>	8-K	09/28/2018	4.1

<b>Exhibit Number</b>	<b>Exhibit Description</b>	<b>Form</b>	<b>Date</b>	<b>Number</b>	<b>File No.</b>	<b>Filed Herewith</b>
4.12	<a href="#">Form of Secured Convertible Note (related to Securities Purchase Agreement, dated February 4, 2019)</a>	8-K	02/06/2019	4.1		
4.13	<a href="#">Registration Rights Agreement, dated May 22, 2019, among GT Biopharma, Inc. and the purchasers named therein</a>	8-K	05/24/2019	10.2		
4.14	<a href="#">Form of Convertible Note (related to Securities Purchase Agreement, dated August 20, 2019)</a>	8-K	05/24/2019	4.1		
4.15	<a href="#">Registration Rights Agreement, dated August 20, 2019, among GT Biopharma, Inc. and the purchasers named therein</a>	8-K	08/20/2019	10.2		
4.16	<a href="#">Form of Convertible Note (related to Securities Purchase Agreement, dated May 22, 2019)</a>	8-K	05/24/2019	4.1		
4.17	<a href="#">Registration Rights Agreement, dated January 30, 2020, among GT Biopharma, Inc. and the purchaser named therein</a>	10-Q	05/15/2020	10.2		
4.18	<a href="#">Registration Rights Agreement, dated January 30, 2020, among GT Biopharma, Inc. and the purchaser named therein</a>	10-Q	05/15/2020	10.2		
4.19	<a href="#">Form of Convertible Note (related to Securities Purchase Agreement, dated January 30, 2020)</a>	10-Q	05/15/2020	10.3		
4.20	<a href="#">Form of Registration Rights Agreement among GT Biopharma, Inc. and the purchaser named therein (executed in April/May 2020)</a>	10-Q	05/15/2020	10.5		
4.21	<a href="#">Form of Convertible Note (related to Securities Purchase Agreement executed in April/May 2020)</a>	10-Q	05/15/2020	10.6		
4.22	<a href="#">Registration Rights Agreement, dated July 7, 2020, among GT Biopharma, Inc. and the purchaser named therein</a>	8-K	07/09/2020	10.3		
4.23	<a href="#">Form of Convertible Note (related to Securities Purchase Agreement, dated July 7, 2020)</a>	8-K	07/09/2020	4.1		
4.24	<a href="#">Form of Convertible Note, dated June 19, 2020 (related to Settlement Agreement, dated June 19, 2020).</a>	8-K	06/19/2020	10.2		
4.25	<a href="#">Form of Pre-Funded Warrant to Purchase Common Stock, dated June 19, 2020 (related to Settlement Agreement, dated June 19, 2020).</a>	8-K	06/19/2020	10.3		
4.26	<a href="#">Form of Convertible Note (related to Securities Purchase Agreement, dated September 16, 2020)</a>	8-K	09/22/2020	4.1		
4.27	<a href="#">Form of Secured Convertible Note</a>	8-K	11/09/2020	4.1		
4.28	<a href="#">Form of Settlement Note, dated November 9, 2020.</a>	10-Q	11/13/2020	10.20		
4.29	<a href="#">Settlement Note, dated December 22, 2020, by GT Biopharma Inc. payable to Alto Opportunity Master Fund, SPC - Segregated Master Portfolio B.</a>	8-K	12/28/2020	10.2		
4.30	<a href="#">Form of Amendment to Convertible Note, dated January 31, 2021</a>	8-K	02/01/2020	10.2		
4.31	<a href="#">Form of Common Warrant</a>	8-K	01/03/2023	4.1		
4.32	<a href="#">Form of Pre-Funded Warrant</a>	8-K	01/03/2023	4.2		
4.33	<a href="#">Form of Placement Agent Warrant</a>	8-K	01/03/2023	4.3		
4.34	<a href="#">Form of Common Warrant</a>	8-K	05/23/2024	4.1		
4.35	<a href="#">Form of Common Warrant</a>					X
4.36	<a href="#">Form of Pre-Funded Warrant</a>					X
4.37	<a href="#">Form of Placement Agent Warrant</a>					X
4.38	<a href="#">GT Biopharma, Inc. 2022 Omnibus Incentive Plan</a>	DEF 14A	04/29/2022			
5.1**	Opinion of Baker & McKenzie LLP	S-1		5.1		
10.1	<a href="#">Exclusive License Agreement, dated July 18, 2016, between the Regents of the University of Minnesota and Oxis Biotech, Inc.</a>	10-Q	08/11/2017	10.3		
10.2	<a href="#">License Agreement, dated September 3, 2015, among Daniel A. Vallera, Jeffrey Lion and Oxis Biotech, Inc.</a>	10-Q	08/11/2017	10.4		
10.3	<a href="#">Clinical Trial Agreement, dated September 2019, between the Regents of the University of Minnesota and GT Biopharma, Inc.</a>	10-Q	05/15/2020	10.7		

<b>Exhibit Number</b>	<b>Exhibit Description</b>	<b>Form</b>	<b>Date</b>	<b>Number</b>	<b>File No.</b>	<b>Filed Herewith</b>
10.4	<a href="#">Securities Purchase Agreement, dated January 30, 2020, among GT Biopharma, Inc. and the purchaser named therein</a>	10-Q	05/15/2020	10.1		
10.5	<a href="#">Form Securities Purchase Agreement among GT Biopharma, Inc. and the purchaser named therein (executed in April/May 2020)</a>	10-Q	05/15/2020	10.4		
10.6	<a href="#">Securities Purchase Agreement, dated July 7, 2020, among GT Biopharma, Inc. and the purchaser named therein</a>	8-K	07/09/2020	10.1		
10.7	<a href="#">Form of Standstill and Forbearance Agreement, dated June 23, 2020, between the Company and certain holders of convertible notes and debentures</a>	8-K	06/23/2020	10.1		
10.8	<a href="#">Settlement Agreement, dated June 19, 2020, among GT Biopharma, Inc., Empery Asset Master Ltd., Empery Tax Efficient, LP and Empery Tax Efficient II, LP, Anthony Cataldo and Paul Kessler,</a>	8-K	06/19/2020	10.1		
10.9	<a href="#">Executive Employment Agreement, dated October 19, 2018, among GT Biopharma, Inc. and Raymond W. Urbanski</a>	10-Q	11/14/2018	10.17		
10.10	<a href="#">Consultant Agreement, dated February 14, 2018, among GT Biopharma, Inc., Georgetown Translational Pharmaceuticals, Inc. and Anthony J. Cataldo</a>	8-K	02/21/2018	10.3		
10.11	<a href="#">Employment agreement with Anthony Cataldo</a>	10-Q	08/14/2020	10.11		
10.12	<a href="#">Employment agreement with Steven Weldon</a>	10-Q	08/14/2020	10.12		
10.13	<a href="#">Securities Purchase Agreement, dated September 16, 2020, among GT Biopharma, Inc. and the purchasers named therein</a>	8-K	09/22/2020	10.1		
10.14	<a href="#">Master Services Agreement, dated October 5, 2020, between Gt Biopharma, Inc. and Cytovance Biologics, Inc.</a>	8-K	10/06/2020	10.1		
10.15	<a href="#">Form of First Amendment and Extension of Standstill and Forbearance Agreement</a>	8-K	11/04/2020	10.1		
10.16	<a href="#">Securities Purchase Agreement</a>	8-K	11/09/2020	10.1		
10.17	<a href="#">Settlement Agreement, dated as of November 9, 2020, by and among Adam Kasower, East Ventures, Inc., A British Virgin Islands company, SV Booth Investments III, LLC, a Delaware limited liability company and Theorem Group, LLC, a California LLC and GT Biopharma Inc., a Delaware corporation.</a>	10-Q	11/13/2020	10.19		
10.18	<a href="#">Steve Weldon Letter of Resignation, dated November 11, 2020</a>	10-Q	11/13/2020	10.21		
10.19	<a href="#">Board Service Agreement with Bruce Wendel, dated November 11, 2020</a>	10-Q	11/13/2020	10.22		
10.20	<a href="#">Board Service Agreement with Greg Berk, dated November 11, 2020</a>	10-Q	11/13/2020	10.23		
10.21	<a href="#">Consultant Agreement with Michael Handelman, dated November 13, 2020</a>	10-Q	11/13/2020	10.24		
10.22	<a href="#">Form of Amendment to Convertible Note &amp; Standstill Agreement</a>	8-K	12/23/2020	10.1		
10.23	<a href="#">Settlement Agreement, dated as of December 22, 2020, by and among Alto Opportunity Master Fund, SPC - Segregated Master Portfolio B, Anthony Cataldo, Paul Kessler and GT Biopharma Inc., a Delaware corporation.</a>	8-K	12/28/2020	10.1		
10.24	<a href="#">Form of Second Amendment and Extension of Standstill and Forbearance Agreement.</a>	8-K	02/01/2020	10.1		
10.25	<a href="#">Board Service Agreement with Rajesh Shrotriya, dated January 12, 2021.</a>	S-1/A	02/08/2021	10.69		

<b>Exhibit Number</b>	<b>Exhibit Description</b>	<b>Form</b>	<b>Date</b>	<b>Number</b>	<b>File No.</b>	<b>Filed Herewith</b>
10.26	<a href="#">Board Service Agreement with Michael Breen, dated January 12, 2021.</a>	S-1/A	02/08/2021	10.70		
10.27	<a href="#">Amendment to Settlement Note with Alto Opportunity Master Fund, SPC - Segregated Master Portfolio B.</a>	S-1/A	02/08/2021	10.71		
10.28	<a href="#">Form of Securities Purchase Agreement - December 2020 / January 2021 Notes</a>	S-1/A	02/08/2021	10.72		
10.29	<a href="#">Form of December 2020 / January 2021 Note</a>	S-1/A	02/08/2021	10.73		
10.30	<a href="#">Amended and Restated Employment Agreement with Anthony Cataldo, dated April 23, 2021.</a>	10-Q	05/17/2021	10.1		
10.31	<a href="#">Amended and Restated Employment Agreement with Michael Handelman, dated April 23, 2021.</a>	10-Q	05/17/2021	10.2		
10.32	<a href="#">Amended and Restated Employment Agreement with Dr. Gregory Berk, dated April 23, 2021</a>	10-Q	05/17/2021	10.3		
10.33	<a href="#">Exclusive License Agreement with Regents of the University of Minnesota, dated March 26, 2021</a>	10-K	03/28/2022	10.73		
10.34	<a href="#">Research Agreement with Regents of the University of Minnesota, dated June 16, 2021.</a>	10-K	03/28/2022	10.74		
10.35	<a href="#">Sublease Agreement dated November, 2021, between Aimmune Therapeutics, Inc. (Sublandlord) and GT Biopharma, Inc. (Subtenant)</a>	10-K	03/28/2022	10.75		
10.36	<a href="#">Employment Agreement with Michael Breen, entered into as of December 31, 2021 with an effective date of November 8, 2021</a>	10-K	03/28/2022	10.76		
10.37	<a href="#">Amendment No. 1 to Employment Agreement with Michael Breen, dated as of June 17, 2022.</a>	10-K	03/26/2024	10.77		
10.38	<a href="#">Amendment No. 2 to Services Agreement with Michael Breen, dated as of February 20, 2023.</a>	10-K	03/26/2024	10.78		
10.39	<a href="#">Board Service Agreement with Michael Breen dated November 11, 2020</a>	10-Q	05/16/2022	10.1		
10.40	<a href="#">Employment Agreement with Manu Ohri dated May 15, 2022</a>	10-Q	05/16/2022	10.2		
10.41	<a href="#">Amendment No. 1 to Employment Agreement with Manu Ohri, dated as of February 17, 2023</a>	10-K	03/26/2024	10.81		
10.42	<a href="#">Settlement and Investment Agreement dated August 24, 2022, by and between GT Biopharma, Inc. and Cytovance Biologics, Inc.</a>	10-Q	10/31/2022	10.1		
10.43	<a href="#">Form of Securities Purchase Agreement, dated December 2022, by and between GT Biopharma, Inc. and the purchasers named therein.</a>	8-K	01/03/2023	10.1		
10.44	<a href="#">Amendment No. 1 to Settlement and Investment Agreement, dated as of April 25, 2024, by and between GT Biopharma, Inc. and Cytovance Biologics, Inc.</a>	8-K	04/30/2024	10.1		

10.45	<a href="#">Amended and Restated Exclusive Patent License Agreement with the Regents of the University of Minnesota, dated May 13, 2024</a>	10-Q	04/30/2024	10.2	
10.46	<a href="#">Sponsored Research Agreement with the Regents of the University of Minnesota dated May 20, 2024</a>	10-Q	04/30/2024	10.3	
10.47	<a href="#">Form of Securities Purchase Agreement</a>	8-K	05/23/2024	10.1	
10.48	<a href="#">Form of Placement Agency Agreement</a>	8-K	05/23/2024	10.2	
10.49	<a href="#">Code of Ethics</a>	10-K	03/31/2015	14.1	
10.50	<a href="#">Investigator Initiated Clinical Trial Agreement</a>	8-K	11/18/2024	10.1	
10.51	<a href="#">Form of Securities Purchase Agreement</a>				X
10.52	<a href="#">Form of Placement Agency Agreement</a>				X
10.53	<a href="#">Employment Agreement between the Company and Alan Urban, dated as of June 7, 2024</a>	8-K	06/07/2024	10.1	
21.1	<a href="#">Subsidiaries of GT Biopharma, Inc.</a>	10-K	03/31/2015	21.1	
23.1	<a href="#">Consent of Weinberg &amp; Company</a>				X

47

Exhibit Number	Exhibit Description	Form	Date	Number	File No.	Filed Herewith
23.2**	Consent of Baker McKenzie LLP (incl. in Exhibit 5.1)					
24.1	<a href="#">Power of Attorney (included on signature page of the initial filing).</a>	S-1	12/23/2024	24.1		
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document					X
107	<a href="#">Filing Fee Table</a>			107		X

† Confidential treatment granted from the Securities and Exchange Commission as to certain portions, which portions have been omitted and filed separately with the Securities and Exchange Commission.

+ Schedules have been omitted pursuant to Item 601(b)(2) of Regulation S-K. GT Biopharma, Inc. will furnish copies of any such schedules to the Securities and Exchange Commission upon request.

\*\* To be filed by amendment.

#### Item 17. Undertakings

(1) The undersigned registrant hereby undertakes:

- a. To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
  - i. To include any prospectus required by Section 10(a)(3) of the Securities Act;
  - ii. To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
  - iii. To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement; provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Securities and Exchange Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement.

48

- b. That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- c. To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- d. That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser, each prospectus filed pursuant to Rule 424(b) as part of a registration statement relating to an offering, other than registration statements relying on Rule 430B or other than prospectuses filed in reliance on Rule 430A, shall be deemed to be part of and included in the registration statement as of the date it is first used after effectiveness. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such first use, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such date of first use.
- e. That, for the purpose of determining liability of the registrant under the Securities Act to any purchaser in the initial distribution of the securities, the undersigned registrant hereby undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
  - i. Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424 (§ 230.424 of this chapter);A



- ii. Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
  - iii. The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
  - iv. Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.
- (2) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

49

---

- (3) The undersigned registrant hereby undertakes that:
- a. For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance on Rule 430A and contained in a form of prospectus filed by the undersigned registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective; and
  - b. For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.
- (4) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

50

---

#### SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Los Angeles, State of California, on January 27, 2025.

#### GT Biopharma Inc.

Date: January 27, 2025

By: /s/ Michael Breen  
Michael Breen  
Interim Chief Executive Officer

#### POWER OF ATTORNEY

Each person whose signature appears below hereby constitutes and appoints each of Michael Breen and Alan Urban is true and lawful attorney-in-fact and agent with full power of substitution and re-substitution, for him and in his name, place, and stead, in any and all capacities, to sign any amendments to this registration statement, and to sign any registration statement for the same offering covered by this registration statement, including post-effective amendments or registration statements filed pursuant to Rule 462(b) under the Securities Act of 1933, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming that each of said such attorneys-in-fact and agents or his or her substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended this registration statement has been signed by the following persons in the capacities dates indicated below.

/s/ Michael Breen  
Michael Breen, Executive Chairman of the Board and  
Interim Chief Executive Officer  
January 27, 2025

/s/ Alan Urban  
Alan Urban, Chief Financial Officer  
January 27, 2025

/s/ Bruce Wendel  
Bruce Wendel, Vice Chairman of the Board  
January 27, 2025

/s/ Rajesh Shrotriva  
Rajesh Shrotriva, Director  
January 27, 2025

/s/ Charles J. Casamento  
Charles J. Casamento, Director  
January 27, 2025

51

---



## COMMON STOCK PURCHASE WARRANT

## GT BIOPHARMA, INC.

Warrant No.: [\_\_\_\_\_]

Warrant Shares: [\_\_\_\_\_]

Initial Exercise Date: [\_\_\_\_\_] , 2025

THIS COMMON STOCK PURCHASE WARRANT (the “Warrant”) certifies that, for value received, [\_\_\_\_\_] or its assigns (the “Holder”) is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the “Initial Exercise Date”) and on or prior to 5:00 p.m. (New York City time) on [\_\_\_\_\_] , 2030<sup>1</sup> (the “Termination Date”) but not thereafter, to subscribe for and purchase from GT Biopharma, Inc., a Delaware corporation (the “Company”), up to [\_\_\_\_\_] shares (as subject to adjustment hereunder, the “Warrant Shares”) of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms have the meanings indicated in this Section 1:

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on the Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

<sup>1</sup> Insert the date that is the 5 year anniversary of the Initial Exercise Date, provided that, if such date is not a Trading Day, insert the immediately following Trading Day.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed; provided, however, for clarification, commercial banks shall not be deemed to be authorized or required by law to remain closed due to “stay at home”, “shelter-in-place”, “non-essential employee” or any other similar orders or restrictions or the closure of any physical branch locations at the direction of any governmental authority so long as the electronic funds transfer systems (including for wire transfers) of commercial banks in The City of New York generally are open for use by customers on such day.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Registration Statement” means the Company’s registration statement on Form S-1 (File No. 333-284032), as amended.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Subsidiary” means any subsidiary of the Company and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the Common Stock is traded on a Trading Market.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (or any successors to any of the foregoing).

“Transfer Agent” means Computershare Trust Company, N.A, the current transfer agent of the Company, with a mailing address of 8742 Lucent Blvd., Suite 225, Highland Ranch, CO 80129 and any successor transfer agent of the Company.

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on the Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the

Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Warrants” means this Warrant and other Common Stock purchase warrants issued by the Company pursuant to the Registration Statement.

## Section 2. Exercise.

a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company of a duly executed PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (the “Notice of Exercise”). Within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier’s check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise on the Trading Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

3

b) Exercise Price. The exercise price per share of Common Stock under this Warrant shall be \$[\_\_\_\_], subject to adjustment hereunder (the “Exercise Price”).

c) Cashless Exercise. If at the time of exercise hereof there is no effective registration statement registering, or the prospectus contained therein is not available for the issuance of the Warrant Shares to the Holder, then this Warrant may only be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) the highest Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. (“Bloomberg”) with two (2) hours of the time of the Holder’s delivery of the Notice of Exercise pursuant to Section 2(a) hereof if such Notice of Exercise is delivered during “regular trading hours,” or within two (2) hours after the close of “regular trading hours,” on a Trading Day or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is delivered pursuant to Section 2(a) hereof after two (2) hours following the close of “regular trading hours” on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. The Company agrees not to take any position contrary to this Section 2(c).

4

## d) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder’s or its designee’s balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system (“DWAC”) if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery of a certificate, registered in the Company’s share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earlier of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise and (ii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the “Warrant Share Delivery Date”); provided, however, that the aggregate Exercise Price has been delivered to the Company by the Warrant Share Delivery Date. Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Holder duly exercises the Warrant pursuant to Section 2(a) hereof and the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the third Trading Day after the Warrant Share Delivery Date) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, “Standard Settlement Period” means the standard settlement period, expressed in a number of Trading Days, on the Company’s primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise.

5

ii. Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with

this Warrant.

iii. Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d) (i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

iv. Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

vi. Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

6

e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within one Trading Day confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% (or, upon election by a Holder prior to the issuance of any Warrants, 9.99%) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61<sup>st</sup> day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

7

a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

8

c) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company or any Subsidiary, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of greater than 50% of the outstanding Common Stock or greater than 50% of the voting power of the common equity of the Company, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires greater than 50% of the outstanding shares of Common Stock or greater than 50% of the voting power of the common equity of the Company (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction, the Company or any Successor Entity (as defined below) shall, at the Holder's option, exercisable at any time concurrently with, or within 30 days after, the consummation of the Fundamental Transaction (or, if later, the date of the public announcement of the applicable Fundamental Transaction), purchase this Warrant from the Holder by paying to the Holder an amount of cash equal to the Black Scholes Value (as defined below) of the remaining unexercised portion of this Warrant on the date of the consummation of such Fundamental Transaction; provided, however, that, if the Fundamental Transaction is not within the Company's control, including not approved by the Company's Board of Directors, the Holder shall only be entitled to receive from the Company or any Successor Entity the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the holders of Common Stock of the Company in connection with the Fundamental Transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Fundamental Transaction; provided, further, that if holders of Common Stock of the Company are not offered or paid any consideration in such Fundamental Transaction, such holders of Common Stock will be deemed to have received common stock of the Successor Entity (which Successor Entity may be the Company following such Fundamental Transaction) in such Fundamental Transaction. "Black Scholes Value" means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the "OV" function on Bloomberg, L.P. ("Bloomberg") determined as of the day of consummation of the applicable Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable contemplated Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the 100 day volatility as obtained from the HVT function on Bloomberg (determined utilizing a 365 day annualization factor) as of the Trading Day immediately following the public announcement of the applicable contemplated Fundamental Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction (D) a remaining option time equal to the time between the date of the public announcement of the applicable contemplated Fundamental Transaction and the Termination Date and (E) a zero cost of borrow. The payment of the Black Scholes Value will be made by wire transfer of immediately available funds (or such other consideration) within the later of (i) five Business Days of the Holder's election and (ii) the date of consummation of the Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 3(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the

relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall be added to the term "Company" under this Warrant (so that from and after the occurrence or consummation of such Fundamental Transaction, each and every provision of this Warrant referring to the "Company" shall refer instead to each of the Company and the Successor Entity or Successor Entities, jointly and severally), and the Successor Entity or Successor Entities, jointly and severally with the Company, may exercise every right and power of the Company prior thereto and the Successor Entity or Successor Entities shall assume all of the obligations of the Company prior thereto under this Warrant and the other Transaction Documents with the same effect as if the Company and such Successor Entity or Successor Entities, jointly and severally, had been named as the Company herein. For the avoidance of doubt, the Holder shall be entitled to the benefits of the provisions of this Section 3(d) regardless of (i) whether the Company has sufficient authorized shares of Common Stock for the issuance of Warrant Shares and/or (ii) whether a Fundamental Transaction occurs prior to the Initial Exercise Date.

9

e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

f) Notice to Holder.

i. Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company (or any of its Subsidiaries) is a party, any sale or transfer of all or substantially all of its assets, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by email to the Holder at its last email address as it shall appear upon the Warrant Register of the Company, at least 20 calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided in this Warrant constitutes, or contains, material, non-public information regarding the Company or any of the Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

10

g) Voluntary Adjustment By Company. Subject to the rules and regulations of the Trading Market, the Company may at any time during the term of this Warrant reduce the then current Exercise Price to any amount and for any period of time deemed appropriate by the Board of Directors.

#### Section 4. Transfer of Warrant.

a) Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the initial issuance date of this Warrant and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

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

#### Section 5. Miscellaneous.

a) No Rights as Stockholder Until Exercise; No Settlement in Cash. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3. Without limiting any rights of a Holder to receive Warrant Shares on a "cashless exercise" pursuant to Section 2(c) or to receive cash payments pursuant to Section 2(d)(i) and Section 2(d)(iv) herein, in no event shall the Company be required to net cash settle an exercise of this Warrant.

11

b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the

loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

12

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

e) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Warrant (whether brought against a party hereto or their respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Warrant and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If either party shall commence an action, suit or proceeding to enforce any provisions of this Warrant, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for their reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

13

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

h) Notices. Any and all notices or other communications or deliveries to be provided by the Holders hereunder including, without limitation, any Notice of Exercise, shall be in writing and delivered personally, by e-mail, or sent by a nationally recognized overnight courier service, addressed to the Company, at [\_\_\_\_], Attention: [\_\_\_\_], email address: [\_\_\_\_], or such other email address or address as the Company may specify for such purposes by notice to the Holders. Any and all notices or other communications or deliveries to be provided by the Company hereunder shall be in writing and delivered personally, by e-mail, or sent by a nationally recognized overnight courier service addressed to each Holder at the e-mail address or address of such Holder appearing on the books of the Company. Any notice or other communication or deliveries hereunder shall be deemed given and effective on the earliest of (i) the time of transmission, if such notice or communication is delivered via e-mail at the e-mail address set forth in this Section prior to 5:30 p.m. (New York City time) on any date, (ii) the next Trading Day after the time of transmission, if such notice or communication is delivered via e-mail at the e-mail address set forth in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

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

j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would



be adequate.

k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company, on the one hand, and the Holder or the beneficial owner of this Warrant, on the other hand.

m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

\*\*\*\*\*

(Signature Page Follows)

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

**GT BIOPHARMA, INC.**

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

**NOTICE OF EXERCISE**

TO: GT BIOPHARMA, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

\_\_\_\_\_

The Warrant Shares shall be delivered to the following DWAC Account Number:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

Signature of Authorized Signatory of Investing Entity: \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

**ASSIGNMENT FORM**

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: \_\_\_\_\_  
(Please Print)

Address: \_\_\_\_\_  
(Please Print)

Phone Number: \_\_\_\_\_

Email Address:

---

---

---

Dated:

\_\_\_\_\_ , \_\_\_\_\_

Holder's Signature:

---

Holder's Address:

---

---

## PRE-FUNDED COMMON STOCK PURCHASE WARRANT

## GT BIOPHARMA, INC.

Warrant No.: [\_\_\_\_\_]

Warrant Shares: [\_\_\_\_\_]

Initial Exercise Date: [\_\_\_\_\_] , 2025

THIS PRE-FUNDED COMMON STOCK PURCHASE WARRANT (the “Warrant”) certifies that, for value received, [\_\_\_\_\_] or its assigns (the “Holder”) is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the “Initial Exercise Date”) and until this Warrant is exercised in full (the “Termination Date”) but not thereafter, to subscribe for and purchase from GT Biopharma, Inc., a Delaware corporation (the “Company”), up to [\_\_\_\_\_] shares (as subject to adjustment hereunder, the “Warrant Shares”) of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b).

Section 1. Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms have the meanings indicated in this Section 1:

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on the Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

1

“Business Day” means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed; provided, however, for clarification, commercial banks shall not be deemed to be authorized or required by law to remain closed due to “stay at home”, “shelter-in-place”, “non-essential employee” or any other similar orders or restrictions or the closure of any physical branch locations at the direction of any governmental authority so long as the electronic funds transfer systems (including for wire transfers) of commercial banks in The City of New York generally are open for use by customers on such day.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Purchase Agreement” means the securities purchase agreement, dated as of [\_\_\_\_\_] , 2025, among the Company and the purchasers signatory therein, as amended, modified or supplemented from time to time in accordance with its terms.

“Registration Statement” means the Company’s registration statement on Form S-1 (File No. 333-284032), as amended.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Subsidiary” means any subsidiary of the Company and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the Common Stock is traded on a Trading Market.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (or any successors to any of the foregoing).

2

“Transfer Agent” means Computershare Trust Company, N.A, the current transfer agent of the Company, with a mailing address of 8742 Lucent Blvd., Suite 225, Highland Ranch, CO 80129 and any successor transfer agent of the Company.

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on the Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the

Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Warrants” means this Warrant and other Pre-Funded Common Stock purchase warrants issued by the Company pursuant to the Registration Statement.

## Section 2. Exercise.

a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company of a duly executed PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (the “Notice of Exercise”). Within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier’s check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise on the Trading Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

3

b) Exercise Price. The aggregate exercise price of this Warrant, except for a nominal exercise price of \$0.0001 per Warrant Share, was pre-funded to the Company on or prior to the Initial Exercise Date and, consequently, no additional consideration (other than the nominal exercise price of \$0.0001 per Warrant Share) shall be required to be paid by the Holder to any Person to effect any exercise of this Warrant. The Holder shall not be entitled to the return or refund of all, or any portion, of such pre-paid aggregate exercise price under any circumstance or for any reason whatsoever. The remaining unpaid exercise price per share of Common Stock under this Warrant shall be \$0.0001, subject to adjustment hereunder (the “Exercise Price”).

c) Cashless Exercise. This Warrant may also be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) the highest Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. (“Bloomberg”) with two (2) hours of the time of the Holder’s delivery of the Notice of Exercise pursuant to Section 2(a) hereof if such Notice of Exercise is delivered during “regular trading hours,” or within two (2) hours after the close of “regular trading hours,” on a Trading Day or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is delivered pursuant to Section 2(a) hereof after two (2) hours following the close of “regular trading hours” on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

4

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. The Company agrees not to take any position contrary to this Section 2(c).

## d) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder’s or its designee’s balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system (“DWAC”) if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery of a certificate, registered in the Company’s share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earlier of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise and (ii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the “Warrant Share Delivery Date”); provided, however, that the aggregate Exercise Price has been delivered to the Company by the Warrant Share Delivery Date. Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Holder duly exercises the Warrant pursuant to Section 2(a) hereof and the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the third Trading Day after the Warrant Share Delivery Date) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, “Standard Settlement Period” means the standard settlement period, expressed in a number of Trading Days, on the Company’s primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise. Notwithstanding the foregoing, with respect to any Notice(s) of Exercise delivered on or prior to 12:00 p.m. (New York City time) on the Initial Exercise Date, which may be delivered at any time after the time of execution of the Purchase Agreement, the Company agrees to deliver the Warrant Shares subject to such notice(s) by 4:00 p.m. (New York City time) on the Initial Exercise Date and the Initial Exercise Date shall be the Warrant Share Delivery Date for purposes hereunder, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received by such Warrant Share Delivery Date.

ii. Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

iii. Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d) (i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

iv. Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

vi. Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within one Trading Day confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% (or, upon election by a Holder prior to the issuance of any Warrants, 9.99%) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61<sup>st</sup> day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation.

Section 3. Certain Adjustments.

a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

c) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company or any Subsidiary, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of greater than 50% of the outstanding Common Stock or greater than 50% of the voting power of the common equity of the Company, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires greater than 50% of the outstanding shares of Common Stock or greater than 50% of the voting power of the common equity of the Company (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 3(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity) equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall be added to the term "Company" under this Warrant (so that from and after the occurrence or consummation of such Fundamental Transaction, each and every provision of this Warrant referring to the "Company" shall refer instead to each of the Company and the Successor Entity or Successor Entities, jointly and severally), and the Successor Entity or Successor Entities, jointly and severally with the Company, may exercise every right and power of the Company prior thereto and the Successor Entity or Successor Entities shall assume all of the obligations of the Company prior thereto under this Warrant and the other Transaction Documents with the same effect as if the Company and such Successor Entity or Successor Entities, jointly and severally, had been named as the Company herein. For the avoidance of doubt, the Holder shall be entitled to the benefits of the provisions of this Section 3(d) regardless of (i) whether the Company has sufficient authorized shares of Common Stock for the issuance of Warrant Shares and/or (ii) whether a Fundamental Transaction occurs prior to the Initial Exercise Date.

e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

f) Notice to Holder.

i. Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company (or any of its Subsidiaries) is a party, any sale or transfer of all or substantially all of its assets, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by email to the Holder at its last email address as it shall appear upon the Warrant Register of the Company, at least 20 calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided in this Warrant constitutes, or contains, material, non-public information regarding the Company or any of the Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

---

Section 4. Transfer of Warrant.

a) Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the initial issuance date of this Warrant and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

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

---

Section 5. Miscellaneous.

a) No Rights as Stockholder Until Exercise; No Settlement in Cash. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3. Without limiting any rights of a Holder to receive Warrant Shares on a "cashless exercise" pursuant to Section 2(c) or to receive cash payments pursuant to Section 2(d)(i) and Section 2(d)(iv) herein, in no event shall the Company be required to net cash settle an exercise of this Warrant.

b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the

Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

12

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

e) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Warrant (whether brought against a party hereto or their respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Warrant and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If either party shall commence an action, suit or proceeding to enforce any provisions of this Warrant, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for their reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

13

f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

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

h) Notices. Any and all notices or other communications or deliveries to be provided by the Holders hereunder including, without limitation, any Notice of Exercise, shall be in writing and delivered personally, by e-mail, or sent by a nationally recognized overnight courier service, addressed to the Company, at [\_\_\_\_], Attention: [\_\_\_\_], email address: [\_\_\_\_], or such other email address or address as the Company may specify for such purposes by notice to the Holders. Any and all notices or other communications or deliveries to be provided by the Company hereunder shall be in writing and delivered personally, by e-mail, or sent by a nationally recognized overnight courier service addressed to each Holder at the e-mail address or address of such Holder appearing on the books of the Company. Any notice or other communication or deliveries hereunder shall be deemed given and effective on the earliest of (i) the time of transmission, if such notice or communication is delivered via e-mail at the e-mail address set forth in this Section prior to 5:30 p.m. (New York City time) on any date, (ii) the next Trading Day after the time of transmission, if such notice or communication is delivered via e-mail at the e-mail address set forth in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

14

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

j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company, on the one hand, and the Holder, on the other hand.

m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.



n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

\*\*\*\*\*

(Signature Page Follows)

15

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

**GT BIOPHARMA, INC.**

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

16

**NOTICE OF EXERCISE**

TO: GT BIOPHARMA, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

\_\_\_\_\_

The Warrant Shares shall be delivered to the following DWAC Account Number:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_  
Signature of Authorized Signatory of Investing Entity: \_\_\_\_\_  
Name of Authorized Signatory: \_\_\_\_\_  
Title of Authorized Signatory: \_\_\_\_\_  
Date: \_\_\_\_\_

**ASSIGNMENT FORM**

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: \_\_\_\_\_  
(Please Print)  
Address: \_\_\_\_\_  
(Please Print)  
Phone Number: \_\_\_\_\_  
Email Address: \_\_\_\_\_  
Dated: \_\_\_\_\_, \_\_\_\_\_  
Holder's Signature: \_\_\_\_\_  
Holder's Address: \_\_\_\_\_

## PLACEMENT AGENT COMMON STOCK PURCHASE WARRANT

## GT BIOPHARMA, INC.

Warrant No.: [\_\_\_\_\_]

Warrant Shares: [\_\_\_\_\_]

Initial Exercise Date: [\_\_\_\_\_], 2025

THIS PLACEMENT AGENT COMMON STOCK PURCHASE WARRANT (the “Warrant”) certifies that, for value received, [\_\_\_\_\_] or its assigns (the “Holder”) is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the “Initial Exercise Date”) and on or prior to 5:00 p.m. (New York City time) on [\_\_\_\_\_], 2030<sup>1</sup> (the “Termination Date”) but not thereafter, to subscribe for and purchase from GT Biopharma, Inc., a Delaware corporation (the “Company”), up to [\_\_\_\_\_] shares (as subject to adjustment hereunder, the “Warrant Shares”) of Common Stock. The purchase price of one share of Common Stock under this Warrant shall be equal to the Exercise Price, as defined in Section 2(b). This Warrant is issued pursuant to that certain Placement Agency Agreement, by and between the Company and Roth Capital Partners, LLC, dated as of [\_\_\_\_\_], 2025.

Section 1. Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms have the meanings indicated in this Section 1:

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 405 under the Securities Act.

“Bid Price” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the bid price of the Common Stock for the time in question (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on the Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the Holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

<sup>1</sup> Insert the date that is the 5 year anniversary of the commencement of sales of the offering.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed; provided, however, for clarification, commercial banks shall not be deemed to be authorized or required by law to remain closed due to “stay at home”, “shelter-in-place”, “non-essential employee” or any other similar orders or restrictions or the closure of any physical branch locations at the direction of any governmental authority so long as the electronic funds transfer systems (including for wire transfers) of commercial banks in The City of New York generally are open for use by customers on such day.

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Registration Statement” means the Company’s registration statement on Form S-1 (File No. 333-284032), as amended.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Subsidiary” means any subsidiary of the Company and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the Common Stock is traded on a Trading Market.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (or any successors to any of the foregoing).

“Transfer Agent” means Computershare Trust Company, N.A., the current transfer agent of the Company, with a mailing address of 8742 Lucent Blvd., Suite 225, Highland Ranch, CO 80129 and any successor transfer agent of the Company.

“VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the Trading Market on which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a Trading Day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if OTCQB or OTCQX is not a Trading Market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on

OTCQB or OTCQX as applicable, (c) if the Common Stock is not then listed or quoted for trading on OTCQB or OTCQX and if prices for the Common Stock are then reported on the Pink Open Market (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the holders of a majority in interest of the Warrants then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

“Warrants” means this Warrant and other Placement Agent Common Stock purchase warrants issued by the Company pursuant to the Registration Statement.

## Section 2. Exercise.

a) Exercise of Warrant. Exercise of the purchase rights represented by this Warrant may be made, in whole or in part, at any time or times on or after the Initial Exercise Date and on or before the Termination Date by delivery to the Company of a duly executed PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise in the form annexed hereto (the “Notice of Exercise”). Within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period (as defined in Section 2(d)(i) herein) following the date of exercise as aforesaid, the Holder shall deliver the aggregate Exercise Price for the shares specified in the applicable Notice of Exercise by wire transfer or cashier’s check drawn on a United States bank unless the cashless exercise procedure specified in Section 2(c) below is specified in the applicable Notice of Exercise. No ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise be required. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant until the Holder has purchased all of the Warrant Shares available hereunder and the Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three (3) Trading Days of the date on which the final Notice of Exercise is delivered to the Company. Partial exercises of this Warrant resulting in purchases of a portion of the total number of Warrant Shares available hereunder shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder in an amount equal to the applicable number of Warrant Shares purchased. The Holder and the Company shall maintain records showing the number of Warrant Shares purchased and the date of such purchases. The Company shall deliver any objection to any Notice of Exercise on the Trading Day of receipt of such notice. **The Holder and any assignee, by acceptance of this Warrant, acknowledge and agree that, by reason of the provisions of this paragraph, following the purchase of a portion of the Warrant Shares hereunder, the number of Warrant Shares available for purchase hereunder at any given time may be less than the amount stated on the face hereof.**

3

b) Exercise Price. The exercise price per share of Common Stock under this Warrant shall be \$[\_\_\_\_], subject to adjustment hereunder (the “Exercise Price”).

c) Cashless Exercise. If at the time of exercise hereof there is no effective registration statement registering, or the prospectus contained therein is not available for the issuance of the Warrant Shares to the Holder, then this Warrant may only be exercised, in whole or in part, at such time by means of a “cashless exercise” in which the Holder shall be entitled to receive a number of Warrant Shares equal to the quotient obtained by dividing [(A-B) (X)] by (A), where:

(A) = as applicable: (i) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise if such Notice of Exercise is (1) delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) delivered pursuant to Section 2(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) the highest Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. (“Bloomberg”) with two (2) hours of the time of the Holder’s delivery of the Notice of Exercise pursuant to Section 2(a) hereof if such Notice of Exercise is delivered during “regular trading hours,” or within two (2) hours after the close of “regular trading hours,” on a Trading Day or (iii) the VWAP on the date of the applicable Notice of Exercise if the date of such Notice of Exercise is a Trading Day and such Notice of Exercise is delivered pursuant to Section 2(a) hereof after two (2) hours following the close of “regular trading hours” on such Trading Day;

(B) = the Exercise Price of this Warrant, as adjusted hereunder; and

(X) = the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a cashless exercise.

If Warrant Shares are issued in such a cashless exercise, the parties acknowledge and agree that in accordance with Section 3(a)(9) of the Securities Act, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. The Company agrees not to take any position contrary to this Section 2(c).

4

## d) Mechanics of Exercise.

i. Delivery of Warrant Shares Upon Exercise. The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Transfer Agent to the Holder by crediting the account of the Holder’s or its designee’s balance account with The Depository Trust Company through its Deposit or Withdrawal at Custodian system (“DWAC”) if the Company is then a participant in such system and either (A) there is an effective registration statement permitting the issuance of the Warrant Shares to or resale of the Warrant Shares by the Holder or (B) this Warrant is being exercised via cashless exercise, and otherwise by physical delivery of a certificate, registered in the Company’s share register in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the address specified by the Holder in the Notice of Exercise by the date that is the earlier of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise and (ii) the number of Trading Days comprising the Standard Settlement Period after the delivery to the Company of the Notice of Exercise (such date, the “Warrant Share Delivery Date”); provided, however, that the aggregate Exercise Price has been delivered to the Company by the Warrant Share Delivery Date. Upon delivery of the Notice of Exercise, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares, provided that payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within the earlier of (i) one (1) Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period following delivery of the Notice of Exercise. If the Holder duly exercises the Warrant pursuant to Section 2(a) hereof and the Company fails for any reason to deliver to the Holder the Warrant Shares subject to a Notice of Exercise by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Notice of Exercise), \$10 per Trading Day (increasing to \$20 per Trading Day on the third Trading Day after the Warrant Share Delivery Date) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise. The Company agrees to maintain a transfer agent that is a participant in the FAST program so long as this Warrant remains outstanding and exercisable. As used herein, “Standard Settlement Period” means the standard settlement period, expressed in a number of Trading Days, on the Company’s primary Trading Market with respect to the Common Stock as in effect on the date of delivery of the Notice of Exercise.

5

ii. Delivery of New Warrants Upon Exercise. If this Warrant shall have been exercised in part, the Company shall, at the request of a Holder

and upon surrender of this Warrant certificate, at the time of delivery of the Warrant Shares, deliver to the Holder a new Warrant evidencing the rights of the Holder to purchase the unpurchased Warrant Shares called for by this Warrant, which new Warrant shall in all other respects be identical with this Warrant.

iii. Rescission Rights. If the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares pursuant to Section 2(d) (i) by the Warrant Share Delivery Date, then the Holder will have the right to rescind such exercise.

iv. Compensation for Buy-In on Failure to Timely Deliver Warrant Shares Upon Exercise. In addition to any other rights available to the Holder, if the Company fails to cause the Transfer Agent to transmit to the Holder the Warrant Shares in accordance with the provisions of Section 2(d)(i) above pursuant to an exercise on or before the Warrant Share Delivery Date, and if after such date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder's brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall (A) pay in cash to the Holder the amount, if any, by which (x) the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of shares of Common Stock with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, evidence of the amount of such loss. Nothing herein shall limit a Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

v. No Fractional Shares or Scrip. No fractional shares or scrip representing fractional shares shall be issued upon the exercise of this Warrant. As to any fraction of a share which the Holder would otherwise be entitled to purchase upon such exercise, the Company shall, at its election, either pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the Exercise Price or round up to the next whole share.

6

vi. Charges, Taxes and Expenses. Issuance of Warrant Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Warrant Shares, all of which taxes and expenses shall be paid by the Company, and such Warrant Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that, in the event that Warrant Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any transfer tax incidental thereto. The Company shall pay all Transfer Agent fees required for same-day processing of any Notice of Exercise and all fees to the Depository Trust Company (or another established clearing corporation performing similar functions) required for same-day electronic delivery of the Warrant Shares.

vii. Closing of Books. The Company will not close its stockholder books or records in any manner which prevents the timely exercise of this Warrant, pursuant to the terms hereof.

e) Holder's Exercise Limitations. The Company shall not effect any exercise of this Warrant, and a Holder shall not have the right to exercise any portion of this Warrant, pursuant to Section 2 or otherwise, to the extent that after giving effect to such issuance after exercise as set forth on the applicable Notice of Exercise, the Holder (together with the Holder's Affiliates, and any other Persons acting as a group together with the Holder or any of the Holder's Affiliates (such Persons, "Attribution Parties")), would beneficially own in excess of the Beneficial Ownership Limitation (as defined below). For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by the Holder and its Affiliates and Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (i) exercise of the remaining, nonexercised portion of this Warrant beneficially owned by the Holder or any of its Affiliates or Attribution Parties and (ii) exercise or conversion of the unexercised or nonconverted portion of any other securities of the Company (including, without limitation, any other Common Stock Equivalents) subject to a limitation on conversion or exercise analogous to the limitation contained herein beneficially owned by the Holder or any of its Affiliates or Attribution Parties. Except as set forth in the preceding sentence, for purposes of this Section 2(e), beneficial ownership shall be calculated in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder, it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Exchange Act and the Holder is solely responsible for any schedules required to be filed in accordance therewith. To the extent that the limitation contained in this Section 2(e) applies, the determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable shall be in the sole discretion of the Holder, and the submission of a Notice of Exercise shall be deemed to be the Holder's determination of whether this Warrant is exercisable (in relation to other securities owned by the Holder together with any Affiliates and Attribution Parties) and of which portion of this Warrant is exercisable, in each case subject to the Beneficial Ownership Limitation, and the Company shall have no obligation to verify or confirm the accuracy of such determination. In addition, a determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. For purposes of this Section 2(e), in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (A) the Company's most recent periodic or annual report filed with the Commission, as the case may be, (B) a more recent public announcement by the Company or (C) a more recent written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding. Upon the written or oral request of a Holder, the Company shall within one Trading Day confirm orally and in writing to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder or its Affiliates or Attribution Parties since the date as of which such number of outstanding shares of Common Stock was reported. The "Beneficial Ownership Limitation" shall be 4.99% (or, upon election by a Holder prior to the issuance of any Warrants, 9.99%) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon notice to the Company, may increase or decrease the Beneficial Ownership Limitation provisions of this Section 2(e), provided that the Beneficial Ownership Limitation in no event exceeds 9.99% of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock upon exercise of this Warrant held by the Holder and the provisions of this Section 2(e) shall continue to apply. Any increase in the Beneficial Ownership Limitation will not be effective until the 61<sup>st</sup> day after such notice is delivered to the Company. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 2(e) to correct this paragraph (or any portion hereof) which may be defective or inconsistent with the intended Beneficial Ownership Limitation herein contained or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitations contained in this paragraph shall apply to a successor holder of this Warrant.

7

### Section 3. Certain Adjustments.

a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding: (i) pays a stock dividend or otherwise makes a distribution or distributions on shares of its Common Stock or any other equity or equity equivalent securities payable in shares of Common Stock (which, for avoidance of doubt, shall not include any shares of Common Stock issued by the Company upon exercise of this Warrant), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, (iii) combines (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, or (iv) issues by reclassification of shares of the Common Stock any shares of capital stock of the Company, then in each case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock (excluding treasury shares, if any) outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event, and the number of shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Exercise Price of this Warrant shall remain unchanged. Any adjustment made pursuant to this Section 3(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification.

b) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that, to the extent that the Holder's right to participate in any such Purchase Right would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

c) Pro Rata Distributions. During such time as this Warrant is outstanding, if the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise, other than cash (including, without limitation, any distribution of stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the Beneficial Ownership Limitation) immediately before the date of which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that, to the extent that the Holder's right to participate in any such Distribution would result in the Holder exceeding the Beneficial Ownership Limitation, then the Holder shall not be entitled to participate in such Distribution to such extent (or in the beneficial ownership of any shares of Common Stock as a result of such Distribution to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Beneficial Ownership Limitation).

8

d) Fundamental Transaction. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the Company with or into another Person, (ii) the Company or any Subsidiary, directly or indirectly, effects any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of greater than 50% of the outstanding Common Stock or greater than 50% of the voting power of the common equity of the Company, (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) the Company, directly or indirectly, in one or more related transactions consummates a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires greater than 50% of the outstanding shares of Common Stock or greater than 50% of the voting power of the common equity of the Company (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the Holder (without regard to any limitation in Section 2(e) on the exercise of this Warrant), the number of shares of Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional consideration (the "Alternate Consideration") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which this Warrant is exercisable immediately prior to such Fundamental Transaction (without regard to any limitation in Section 2(e) on the exercise of this Warrant). For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. Notwithstanding anything to the contrary, in the event of a Fundamental Transaction, the Company or any Successor Entity (as defined below) shall, at the Holder's option, exercisable at any time concurrently with, or within 30 days after, the consummation of the Fundamental Transaction (or, if later, the date of the public announcement of the applicable Fundamental Transaction), purchase this Warrant from the Holder by paying to the Holder an amount of cash equal to the Black Scholes Value (as defined below) of the remaining unexercised portion of this Warrant on the date of the consummation of such Fundamental Transaction; provided, however, that, if the Fundamental Transaction is not within the Company's control, including not approved by the Company's Board of Directors, the Holder shall only be entitled to receive from the Company or any Successor Entity the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the holders of Common Stock of the Company in connection with the Fundamental Transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Fundamental Transaction; provided, further, that if holders of Common Stock of the Company are not offered or paid any consideration in such Fundamental Transaction, such holders of Common Stock will be deemed to have received common stock of the Successor Entity (which Successor Entity may be the Company following such Fundamental Transaction) in such Fundamental Transaction. "Black Scholes Value" means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the "OV" function on Bloomberg, L.P. ("Bloomberg") determined as of the day of consummation of the applicable Fundamental Transaction for pricing purposes and reflecting (A) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the time between the date of the public announcement of the applicable contemplated Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the 100 day volatility as obtained from the HVT function on Bloomberg (determined utilizing a 365 day annualization factor) as of the Trading Day immediately following the public announcement of the applicable contemplated Fundamental Transaction, (C) the underlying price per share used in such calculation shall be the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction, (D) a remaining option time equal to the time between the date of the public announcement of the applicable contemplated Fundamental Transaction and the Termination Date and (E) a zero cost of borrow. The payment of the Black Scholes Value will be made by wire transfer of immediately available funds (or such other consideration) within the later of (i) five Business Days of the Holder's election and (ii) the date of consummation of the Fundamental Transaction. The Company shall cause any successor entity in a Fundamental Transaction in which the Company is not the survivor (the "Successor Entity") to assume in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 3(d) pursuant to written agreements in form and substance reasonably satisfactory to the Holder and approved by the Holder (without unreasonable delay) prior to such Fundamental Transaction and shall, at the option of the Holder, deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant which is exercisable for a corresponding number of shares of capital stock of such Successor Entity (or its parent entity)

equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction), and which is reasonably satisfactory in form and substance to the Holder. Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall be added to the term "Company" under this Warrant (so that from and after the occurrence or consummation of such Fundamental Transaction, each and every provision of this Warrant referring to the "Company" shall refer instead to each of the Company and the Successor Entity or Successor Entities, jointly and severally), and the Successor Entity or Successor Entities, jointly and severally with the Company, may exercise every right and power of the Company prior thereto and the Successor Entity or Successor Entities shall assume all of the obligations of the Company prior thereto under this Warrant and the other Transaction Documents with the same effect as if the Company and such Successor Entity or Successor Entities, jointly and severally, had been named as the Company herein. For the avoidance of doubt, the Holder shall be entitled to the benefits of the provisions of this Section 3(d) regardless of (i) whether the Company has sufficient authorized shares of Common Stock for the issuance of Warrant Shares and/or (ii) whether a Fundamental Transaction occurs prior to the Initial Exercise Date.

9

e) Calculations. All calculations under this Section 3 shall be made to the nearest cent or the nearest 1/100th of a share, as the case may be. For purposes of this Section 3, the number of shares of Common Stock deemed to be issued and outstanding as of a given date shall be the sum of the number of shares of Common Stock (excluding treasury shares, if any) issued and outstanding.

f) Notice to Holder.

i. Adjustment to Exercise Price. Whenever the Exercise Price is adjusted pursuant to any provision of this Section 3, the Company shall promptly deliver to the Holder by email a notice setting forth the Exercise Price after such adjustment and any resulting adjustment to the number of Warrant Shares and setting forth a brief statement of the facts requiring such adjustment.

ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (C) the Company shall authorize the granting to all holders of the Common Stock rights or warrants to subscribe for or purchase any shares of capital stock of any class or of any rights, (D) the approval of any stockholders of the Company shall be required in connection with any reclassification of the Common Stock, any consolidation or merger to which the Company (or any of its Subsidiaries) is a party, any sale or transfer of all or substantially all of its assets, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property, or (E) the Company shall authorize the voluntary or involuntary dissolution, liquidation or winding up of the affairs of the Company, then, in each case, the Company shall cause to be delivered by email to the Holder at its last email address as it shall appear upon the Warrant Register of the Company, at least 20 calendar days prior to the applicable record or effective date hereinafter specified, a notice stating (x) the date on which a record is to be taken for the purpose of such dividend, distribution, redemption, rights or warrants, or if a record is not to be taken, the date as of which the holders of the Common Stock of record to be entitled to such dividend, distributions, redemption, rights or warrants are to be determined or (y) the date on which such reclassification, consolidation, merger, sale, transfer or share exchange is expected to become effective or close, and the date as of which it is expected that holders of the Common Stock of record shall be entitled to exchange their shares of the Common Stock for securities, cash or other property deliverable upon such reclassification, consolidation, merger, sale, transfer or share exchange; provided that the failure to deliver such notice or any defect therein or in the delivery thereof shall not affect the validity of the corporate action required to be specified in such notice. To the extent that any notice provided in this Warrant constitutes, or contains, material, non-public information regarding the Company or any of the Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K. The Holder shall remain entitled to exercise this Warrant during the period commencing on the date of such notice to the effective date of the event triggering such notice except as may otherwise be expressly set forth herein.

10

#### Section 4. Transfer of Warrant.

a) Transferability. This Warrant and all rights hereunder (including, without limitation, any registration rights) are transferable, in whole or in part, upon surrender of this Warrant at the principal office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. Notwithstanding anything herein to the contrary, the Holder shall not be required to physically surrender this Warrant to the Company unless the Holder has assigned this Warrant in full, in which case, the Holder shall surrender this Warrant to the Company within three (3) Trading Days of the date on which the Holder delivers an assignment form to the Company assigning this Warrant in full. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

b) New Warrants. This Warrant may be divided or combined with other Warrants upon presentation hereof at the aforesaid office of the Company, together with a written notice specifying the names and denominations in which new Warrants are to be issued, signed by the Holder or its agent or attorney. Subject to compliance with Section 4(a), as to any transfer which may be involved in such division or combination, the Company shall execute and deliver a new Warrant or Warrants in exchange for the Warrant or Warrants to be divided or combined in accordance with such notice. All Warrants issued on transfers or exchanges shall be dated the initial issuance date of this Warrant and shall be identical with this Warrant except as to the number of Warrant Shares issuable pursuant thereto.

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

#### Section 5. Miscellaneous.

a) No Rights as Stockholder Until Exercise; No Settlement in Cash. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof as set forth in Section 2(d)(i), except as expressly set forth in Section 3. Without limiting any rights of a Holder to receive Warrant Shares on a "cashless exercise" pursuant to Section 2(c) or to receive cash payments pursuant to Section 2(d)(i) and Section 2(d)(iv) herein, in no event shall the Company be required to net cash settle an exercise of this Warrant.

11

b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Warrant Shares, and in case of loss, theft or destruction, of indemnity or

security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

d) Authorized Shares.

The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of issuing the necessary Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Trading Market upon which the Common Stock may be listed. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Warrant Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (i) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (ii) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant and (iii) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof, as may be, necessary to enable the Company to perform its obligations under this Warrant.

12

---

Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

e) Governing Law. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Warrant (whether brought against a party hereto or their respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such suit, action or proceeding is improper or is an inconvenient venue for such proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Warrant and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If either party shall commence an action, suit or proceeding to enforce any provisions of this Warrant, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for their reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

f) Restrictions. The Holder acknowledges that the Warrant Shares acquired upon the exercise of this Warrant, if not registered, and the Holder does not utilize cashless exercise, will have restrictions upon resale imposed by state and federal securities laws.

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

h) Notices. Any and all notices or other communications or deliveries to be provided by the Holders hereunder including, without limitation, any Notice of Exercise, shall be in writing and delivered personally, by e-mail, or sent by a nationally recognized overnight courier service, addressed to the Company, at [\_\_\_\_], Attention: [\_\_\_\_], email address: [\_\_\_\_], or such other email address or address as the Company may specify for such purposes by notice to the Holders. Any and all notices or other communications or deliveries to be provided by the Company hereunder shall be in writing and delivered personally, by e-mail, or sent by a nationally recognized overnight courier service addressed to each Holder at the e-mail address or address of such Holder appearing on the books of the Company. Any notice or other communication or deliveries hereunder shall be deemed given and effective on the earliest of (i) the time of transmission, if such notice or communication is delivered via e-mail at the e-mail address set forth in this Section prior to 5:30 p.m. (New York City time) on any date, (ii) the next Trading Day after the time of transmission, if such notice or communication is delivered via e-mail at the e-mail address set forth in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the second Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any Subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

13

---

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

j) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

k) Successors and Assigns. Subject to applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Warrant Shares.

l) Amendment. This Warrant may be modified or amended or the provisions hereof waived with the written consent of the Company, on the one hand, and the Holder or the beneficial owner of this Warrant, on the other hand.

m) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

n) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

\*\*\*\*\*

(Signature Page Follows)

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

**GT BIOPHARMA, INC.**

By: \_\_\_\_\_  
Name:  
Title:

**NOTICE OF EXERCISE**

TO: GT BIOPHARMA, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Warrant Shares of the Company pursuant to the terms of the attached Warrant (only if exercised in full), and tenders herewith payment of the exercise price in full, together with all applicable transfer taxes, if any.

(2) Payment shall take the form of (check applicable box):

in lawful money of the United States; or

the cancellation of such number of Warrant Shares as is necessary, in accordance with the formula set forth in subsection 2(c), to exercise this Warrant with respect to the maximum number of Warrant Shares purchasable pursuant to the cashless exercise procedure set forth in subsection 2(c).

(3) Please issue said Warrant Shares in the name of the undersigned or in such other name as is specified below:

\_\_\_\_\_

The Warrant Shares shall be delivered to the following DWAC Account Number:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_  
Signature of Authorized Signatory of Investing Entity: \_\_\_\_\_  
Name of Authorized Signatory: \_\_\_\_\_  
Title of Authorized Signatory: \_\_\_\_\_  
Date: \_\_\_\_\_

**ASSIGNMENT FORM**

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to purchase shares.)

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to

Name: \_\_\_\_\_  
(Please Print)  
Address: \_\_\_\_\_  
(Please Print)  
Phone Number: \_\_\_\_\_  
Email Address: \_\_\_\_\_  
Dated: \_\_\_\_\_, \_\_\_\_\_  
Holder's Signature: \_\_\_\_\_



Holder's Address: \_\_\_\_\_

---

## SECURITIES PURCHASE AGREEMENT

This Securities Purchase Agreement (this “Agreement”) is dated as of [\_\_\_\_], 2025, between GT Biopharma, Inc., a Delaware corporation (the “Company”), and each purchaser identified on the signature pages hereto (each, including its successors and assigns, a “Purchaser” and collectively the “Purchasers”).

WHEREAS, subject to the terms and conditions set forth in this Agreement and pursuant to an effective registration statement under the Securities Act (as defined below), the Company desires to issue and sell to each Purchaser, and each Purchaser, severally and not jointly, desires to purchase from the Company, securities of the Company as more fully described in this Agreement.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and each Purchaser agree as follows:

**ARTICLE I.**  
DEFINITIONS

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, for all purposes of this Agreement, the following terms have the meanings set forth in this Section 1.1:

“Acquiring Person” shall have the meaning ascribed to such term in Section 4.5.

“Action” shall have the meaning ascribed to such term in Section 3.1(j).

“Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 405 under the Securities Act.

“Board of Directors” means the board of directors of the Company.

“Business Day” means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed; provided, however, for clarification, commercial banks shall not be deemed to be authorized or required by law to remain closed due to “stay at home”, “shelter-in-place”, “non-essential employee” or any other similar orders or restrictions or the closure of any physical branch locations at the direction of any governmental authority so long as the electronic funds transfer systems (including for wire transfers) of commercial banks in The City of New York are generally open for use by customers on such day.

“Closing” means the closing of the purchase and sale of the Securities pursuant to Section 2.1.

“Closing Date” means the Trading Day on which all of the Transaction Documents have been executed and delivered by the applicable parties thereto, and all conditions precedent to (i) the Purchasers’ obligations to pay the Subscription Amount and (ii) the Company’s obligations to deliver the Securities, in each case, have been satisfied or waived, but in no event later than the first (1<sup>st</sup>) Trading Day following the date hereof (or the second (2<sup>nd</sup>) Trading Day following the date hereof if the Agreement is signed on a day that is not a Trading Day or after 4:00 p.m. (New York City time) and before midnight (New York City time) on a Trading Day).

1

“Commission” means the United States Securities and Exchange Commission.

“Common Stock” means the common stock of the Company, par value \$0.001 per share, and any other class of securities into which such securities may hereafter be reclassified or changed.

“Common Stock Equivalents” means any securities of the Company or the Subsidiaries which would entitle the holder thereof to acquire at any time Common Stock, including, without limitation, any debt, preferred stock, right, option, warrant or other instrument that is at any time convertible into or exercisable or exchangeable for, or otherwise entitles the holder thereof to receive, Common Stock.

“Common Warrants” means, collectively, the Common Stock purchase warrants delivered to the Purchasers at the Closing in accordance with Section 2.2(a) hereof, which Common Warrants shall be exercisable immediately upon issuance and have a term of exercise equal to five (5) years after the initial exercise date, in the form of Exhibit A-1 attached hereto.

“Common Warrant Shares” means, collectively, the shares of Common Stock issuable upon exercise of the Common Warrants.

“Company Counsel” means Baker & McKenzie LLP, with offices located at 425 Fifth Avenue, New York, New York 10018.

“Disclosure Schedules” means the Disclosure Schedules of the Company delivered concurrently herewith.

“Disclosure Time” means, (i) if this Agreement is signed on a day that is not a Trading Day or after 9:00 a.m. (New York City time) and before midnight (New York City time) on any Trading Day, 9:01 a.m. (New York City time) on the Trading Day immediately following the date hereof, unless otherwise instructed as to an earlier time by the Placement Agent, and (ii) if this Agreement is signed between midnight (New York City time) and 9:00 a.m. (New York City time) on any Trading Day, no later than 9:01 a.m. (New York City time) on the date hereof, unless otherwise instructed as to an earlier time by the Placement Agent.

“EGS” means Ellenoff Grossman & Schole LLP, with offices located at 1345 Avenue of the Americas, New York, New York 10105-0302.

“Evaluation Date” shall have the meaning ascribed to such term in Section 3.1(s).

2

“Exchange Act” means the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder.

“Exempt Issuance” means the issuance of (a) shares of Common Stock or options to employees, officers or directors of the Company pursuant to any stock or option plan duly adopted for such purpose, by a majority of the non-employee members of the Board of Directors or a majority of the members of a committee of non-employee directors established for such purpose for services rendered to the Company, (b) securities upon the exercise or exchange of or conversion of any Securities issued hereunder, warrants to the Placement Agent in connection with the transactions pursuant to this Agreement and any securities upon exercise of warrants to the

Placement Agent and/or other securities exercisable or exchangeable for or convertible into shares of Common Stock issued and outstanding on the date of this Agreement, provided that such securities have not been amended since the date of this Agreement to increase the number of such securities or to decrease the exercise price, exchange price or conversion price of such securities (other than in connection with stock splits or combinations) or to extend the term of such securities, (c) securities issued pursuant to acquisitions or strategic transactions approved by a majority of the disinterested directors of the Company, provided that such securities are issued as “restricted securities” (as defined in Rule 144) and carry no registration rights that require or permit the filing of any registration statement in connection therewith during the prohibition period in Section 4.11(a) herein, and provided that any such issuance shall only be to a Person (or to the equityholders of a Person) which is, itself or through its subsidiaries, an operating company or an owner of an asset in a business synergistic with the business of the Company and shall provide to the Company additional benefits in addition to the investment of funds, but shall not include a transaction in which the Company is issuing securities primarily for the purpose of raising capital or to an entity whose primary business is investing in securities, and (d) Securities issued to other purchasers pursuant to the Prospectus concurrently with the Closing at the same Per Share Purchase Price.

“FCPA” means the Foreign Corrupt Practices Act of 1977, as amended.

“FDA” shall have the meaning ascribed to such term in Section 3.1(hh).

“FDCA” shall have the meaning ascribed to such term in Section 3.1(hh).

“GAAP” shall have the meaning ascribed to such term in Section 3.1(h).

“Indebtedness” shall have the meaning ascribed to such term in Section 3.1(aa).

“Intellectual Property Rights” shall have the meaning ascribed to such term in Section 3.1(p).

“Liens” means a lien, charge, pledge, security interest, encumbrance, right of first refusal, preemptive right or other restriction.

---

3

“Lock-Up Agreement” means the Lock-Up Agreement, dated as of the date hereof, by and among the Company and the directors, officers and 10% and greater stockholders of the Company, in the form of Exhibit C attached hereto.

“Material Adverse Effect” shall have the meaning assigned to such term in Section 3.1(b).

“Material Permits” shall have the meaning ascribed to such term in Section 3.1(n).

“Per Share Purchase Price” equals \$[ ], subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement, provided that the purchase price per Pre-Funded Warrant shall be the Per Share Purchase Price minus \$0.0001.

“Person” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

“Pharmaceutical Product” shall have the meaning ascribed to such term in Section 3.1(hh).

“Placement Agent” means Roth Capital Partners, LLC.

“Pre-Funded Warrants” means, collectively, the Pre-Funded Common Stock purchase warrants delivered to the Purchasers at the Closing in accordance with Section 2.2(a) hereof, which Pre-Funded Warrants shall be exercisable immediately and shall expire when exercised in full, in the form of Exhibit A-2 attached hereto.

“Pre-Funded Warrant Shares” means, collectively, the shares of Common Stock issuable upon exercise of the Pre-Funded Warrants.

“Preliminary Prospectus” means any preliminary prospectus included in the Registration Statement, as originally filed or as part of any amendment thereto, or filed with the Commission pursuant to Rule 424(a) of the rules and regulations of the Commission under the Securities Act.

“Pricing Prospectus” means (i) the Preliminary Prospectus relating to the Securities that was included in the Registration Statement immediately prior to [ ] a.m./p.m. (New York City time) on the date hereof and (ii) any free writing prospectus (as defined in the Securities Act), taken together.

“Proceeding” means an action, claim, suit, investigation or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition), whether commenced or threatened.

“Prospectus” means the final prospectus filed for the Registration Statement.

---

4

“Purchaser Party” shall have the meaning ascribed to such term in Section 4.8.

“Registration Statement” means the effective registration statement on Form S-1 with Commission File No. 333-284032 which registers the sale of the Shares, the Warrants and the Warrant Shares to the Purchasers, including all information, documents and exhibits filed with or incorporated by reference into such registration statement, and includes any Rule 462(b) Registration Statement.

“Required Approvals” shall have the meaning ascribed to such term in Section 3.1(e).

“Rule 144” means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 424” means Rule 424 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended or interpreted from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same purpose and effect as such Rule.

“Rule 462(b) Registration Statement” means any registration statement prepared by the Company registering additional Securities, which was filed with the Commission on or prior to the date hereof and became automatically effective pursuant to Rule 462(b) promulgated by the Commission pursuant to the Securities Act.

“SEC Reports” shall have the meaning ascribed to such term in Section 3.1(h).

“Securities” means the Shares, the Warrants and the Warrant Shares.

“Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

“Shares” means the shares of Common Stock issued or issuable to each Purchaser pursuant to this Agreement.

“Short Sales” means all “short sales” as defined in Rule 200 of Regulation SHO under the Exchange Act (but shall not be deemed to include locating and/or borrowing shares of Common Stock).

“Subscription Amount” means, as to each Purchaser, the aggregate amount to be paid for Shares and Warrants purchased hereunder as specified below such Purchaser’s name on the signature page of this Agreement and next to the heading “Subscription Amount,” in United States dollars and in immediately available funds (minus, if applicable, a Purchaser’s aggregate exercise price of the Pre-Funded Warrants, which amounts shall be paid as and when such Pre-Funded Warrants are exercised for cash).

---

5

“Subsidiary” means any subsidiary of the Company as set forth on Schedule 3.1(a), and shall, where applicable, also include any direct or indirect subsidiary of the Company formed or acquired after the date hereof.

“Trading Day” means a day on which the principal Trading Market is open for trading.

“Trading Market” means any of the following markets or exchanges on which the Common Stock is listed or quoted for trading on the date in question: the NYSE American, the Nasdaq Capital Market, the Nasdaq Global Market, the Nasdaq Global Select Market or the New York Stock Exchange (or any successors to any of the foregoing).

“Transaction Documents” means this Agreement, the Lock-Up Agreement, the Warrants, all exhibits and schedules thereto and hereto and any other documents or agreements executed in connection with the transactions contemplated hereunder.

“Transfer Agent” means Computershare Trust Company, N.A., the current transfer agent of the Company, and any successor transfer agent of the Company.

“Variable Rate Transaction” shall have the meaning ascribed to such term in Section 4.11(b).

“Warrants” means, collectively, the Common Warrants and the Pre-Funded Warrants.

“Warrant Shares” means, collectively, the Common Warrant Shares and the Pre-Funded Warrant Shares.

---

6

## ARTICLE II. PURCHASE AND SALE

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, the Company agrees to sell, and each of the Purchasers, severally and not jointly, agree to purchase, up to an aggregate of \$[ ] of Shares and Common Warrants as set forth on the signature page; provided, however, that, to the extent that a Purchaser determines, in its sole discretion, that such Purchaser (together with such Purchaser’s Affiliates, and any Person acting as a group together with such purchaser or any of such Purchaser’s Affiliates) would beneficially own in excess of the Beneficial Ownership Limitation, or as such Purchaser may otherwise choose, in lieu of purchasing Shares such Purchaser may elect to purchase Pre-Funded Warrants in lieu of Shares in such manner to result in the same aggregate purchase price being paid by such Purchaser to the Company. The “Beneficial Ownership Limitation” shall be 4.99% (or, at the election of the Purchaser at Closing, 9.99%) of the number of shares of the Common Stock outstanding immediately after giving effect to the issuance of the Securities on the Closing Date. Each Purchaser’s Subscription Amount as set forth on the signature page hereto executed by such Purchaser shall be made available for “Delivery Versus Payment” settlement with the Company or its designee. The Company shall deliver to each Purchaser its respective Shares and Warrants as determined pursuant to Section 2.2(a), and the Company and each Purchaser shall deliver the other items set forth in Section 2.2 deliverable at the Closing. Upon satisfaction of the covenants and conditions set forth in Sections 2.2 and 2.3, the Closing shall take place remotely by electronic transfer of the Closing documentation. Unless otherwise directed by the Placement Agent, settlement of the Shares shall occur via “Delivery Versus Payment” (“DVP”) (i.e., on the Closing Date, the Company shall issue the Shares registered in the Purchasers’ names and addresses and released by the Transfer Agent directly to the account(s) at the Placement Agent identified by each Purchaser; upon receipt of such Shares, the Placement Agent shall promptly electronically deliver such Shares to the applicable Purchaser, and payment therefor shall be made by the Placement Agent (or its clearing firm) by wire transfer to the Company). Notwithstanding anything herein to the contrary, if at any time on or after the time of execution of this Agreement by the Company and an applicable Purchaser, through, and including the time immediately prior to the Closing (the “Pre-Settlement Period”), such Purchaser sells to any Person all, or any portion, of the Shares to be issued hereunder to such Purchaser at the Closing (collectively, the “Pre-Settlement Shares”), such Purchaser shall, automatically hereunder (without any additional required actions by such Purchaser or the Company), be deemed to be unconditionally bound to purchase, such Pre-Settlement Shares to such Purchaser at the Closing; provided, that the Company shall not be required to deliver any Pre-Settlement Shares to such Purchaser prior to the Company’s receipt of the purchase price of such Pre-Settlement Shares hereunder; and provided further that the Company hereby acknowledges and agrees that the forgoing shall not constitute a representation or covenant by such Purchaser as to whether or not during the Pre-Settlement Period such Purchaser shall sell any shares of Common Stock to any Person and that any such decision to sell any shares of Common Stock by such Purchaser shall solely be made at the time such Purchaser elects to effect any such sale, if any. Notwithstanding anything to the contrary herein and a Purchaser’s Subscription Amount set forth on the signature pages attached hereto, the number of Shares purchased by a Purchaser (and its Affiliates) hereunder shall not, when aggregated with all other shares of Common Stock beneficially owned by such Purchaser (and its Affiliates) at such time, result in such Purchaser beneficially owning (as determined in accordance with Section 13(d) of the Exchange Act) in excess of 9.99% of the then issued and outstanding Common Stock outstanding at the Closing (the “Beneficial Ownership Maximum”), and such Purchaser’s Subscription Amount, to the extent it would otherwise exceed the Beneficial Ownership Maximum immediately prior to the Closing, shall be conditioned upon the issuance of Shares at the Closing to the other Purchasers signatory hereto. To the extent that a Purchaser’s beneficial ownership of the Shares would otherwise be deemed to exceed the Beneficial Ownership Maximum, such Purchaser’s Subscription Amount shall automatically be reduced as necessary in order to comply with this paragraph. Notwithstanding the foregoing, with respect to any Notice(s) of Exercise (as defined in the Pre-Funded Warrants) delivered on or prior to 12:00 p.m. (New York City time) on the Closing Date, which may be delivered at any time after the time of execution of this Agreement, the Company agrees to deliver the Warrant Shares subject to such notice(s) by 4:00 p.m. (New York City time) on the Closing Date and the Closing Date shall be the Warrant Share Delivery Date (as defined in the Pre-Funded Warrants) for purposes hereunder. Each Purchaser acknowledges that, concurrently with the Closing and pursuant to the Prospectus, the Company may sell up to \$[ ] of additional Shares and Warrants to purchasers not party to this Agreement, less the aggregate Subscription Amount pursuant to this Agreement, and will issue to each such purchaser such additional Shares and Warrants in the same form and at the same Per Share Purchase Price.

---

7

2.2 Deliveries.

(a) On or prior to the Closing Date (except as indicated below), the Company shall deliver or cause to be delivered to each Purchaser the following:

(i) this Agreement duly executed by the Company;

(ii) a legal opinion of Company Counsel, directed to the Placement Agent and the Purchasers, in form and substance reasonably satisfactory to the Placement Agent and the Purchasers;

(iii) subject to Section 2.1, the Company shall have provided each Purchaser with the Company's wire instructions, on Company letterhead and executed by the Chief Executive Officer or Chief Financial Officer;

(iv) subject to Section 2.1, a copy of the irrevocable instructions to the Transfer Agent instructing the Transfer Agent to deliver on an expedited basis via The Depository Trust Company Deposit or Withdrawal at Custodian system ("DWAC") Shares equal to such Purchaser's Subscription Amount divided by the Per Share Purchase Price (minus the number of shares of Common Stock issuable upon exercise of such Purchaser's Pre-Funded Warrant, if applicable), registered in the name of such Purchaser;

(v) a Common Warrant registered in the name of such Purchaser to purchase up to a number of shares of Common Stock equal to 100% of the sum of such Purchaser's Shares and Pre-Funded Warrants, with an exercise price equal to \$[\_\_\_\_], subject to adjustment therein;

(vi) for each Purchaser of Pre-Funded Warrants pursuant to Section 2.1, a Pre-Funded Warrant registered in the name of such Purchaser to purchase up to a number of shares of Common Stock equal to the portion of such Purchaser's Subscription Amount applicable to Pre-Funded Warrant divided by the Per Share Purchase Price minus \$0.0001, with an exercise price equal to \$0.0001, subject to adjustment therein;

(vii) on the date hereof, the duly executed Lock-Up Agreements; and

(viii) the Pricing Prospectus and Prospectus (which may be delivered in accordance with Rule 172 under the Securities Act).

(b) On or prior to the Closing Date, each Purchaser shall deliver or cause to be delivered to the Company the following:

(i) this Agreement duly executed by such Purchaser; and

(ii) such Purchaser's Subscription Amount, which shall be made available for "Delivery Versus Payment" settlement with the Company or its designee.

8

### 2.3 Closing Conditions.

(a) The obligations of the Company hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) when made and on the Closing Date of the representations and warranties of the Purchasers contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) as of such date);

(ii) all obligations, covenants and agreements of each Purchaser required to be performed at or prior to the Closing Date shall have been performed; and

(iii) the delivery by each Purchaser of the items set forth in Section 2.2(b) of this Agreement.

(b) The respective obligations of the Purchasers hereunder in connection with the Closing are subject to the following conditions being met:

(i) the accuracy in all material respects (or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) when made and on the Closing Date of the representations and warranties of the Company contained herein (unless as of a specific date therein in which case they shall be accurate in all material respects or, to the extent representations or warranties are qualified by materiality or Material Adverse Effect, in all respects) as of such date);

(ii) all obligations, covenants and agreements of the Company required to be performed at or prior to the Closing Date shall have been performed;

(iii) the delivery by the Company of the items set forth in Section 2.2(a) of this Agreement;

(iv) there shall have been no Material Adverse Effect with respect to the Company since the date hereof; and

(v) from the date hereof to the Closing Date, trading in the Common Stock shall not have been suspended by the Commission or the Company's principal Trading Market, and, at any time prior to the Closing Date, trading in securities generally as reported by Bloomberg L.P. shall not have been suspended or limited, or minimum prices shall not have been established on securities whose trades are reported by such service, or on any Trading Market, nor shall a banking moratorium have been declared either by the United States or New York State authorities nor shall there have occurred any material outbreak or escalation of hostilities or other national or international calamity of such magnitude in its effect on, or any material adverse change in, any financial market which, in each case, in the reasonable judgment of such Purchaser, makes it impracticable or inadvisable to purchase the Securities at the Closing.

9

## ARTICLE III. REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as set forth in the Disclosure Schedules, which Disclosure Schedules shall be deemed a part hereof and shall qualify any representation or otherwise made herein to the extent of the disclosure contained in the corresponding section of the Disclosure Schedules, the Company hereby makes the following representations and warranties to each Purchaser:

(a) Subsidiaries. All of the direct and indirect subsidiaries of the Company are set forth on Schedule 3.1(a). The Company owns, directly or indirectly, all of the capital stock or other equity interests of each Subsidiary free and clear of any Liens, and all of the issued and outstanding shares of capital stock of each Subsidiary are validly issued and are fully paid, non-assessable and free of preemptive and similar rights to subscribe for or purchase securities. If the Company has no subsidiaries, all

other references to the Subsidiaries or any of them in the Transaction Documents shall be disregarded.

(b) Organization and Qualification. The Company and each of the Subsidiaries is an entity duly incorporated or otherwise organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization, with the requisite power and authority to own and use its properties and assets and to carry on its business as currently conducted. Neither the Company nor any Subsidiary is in violation nor default of any of the provisions of its respective certificate or articles of incorporation, bylaws or other organizational or charter documents. Each of the Company and the Subsidiaries is duly qualified to conduct business and is in good standing as a foreign corporation or other entity in each jurisdiction in which the nature of the business conducted or property owned by it makes such qualification necessary, except where the failure to be so qualified or in good standing, as the case may be, could not have or reasonably be expected to result in: (i) a material adverse effect on the legality, validity or enforceability of any Transaction Document, (ii) a material adverse effect on the results of operations, assets, business, prospects or condition (financial or otherwise) of the Company and the Subsidiaries, taken as a whole, or (iii) a material adverse effect on the Company's ability to perform in any material respect on a timely basis its obligations under any Transaction Document (any of (i), (ii) or (iii), a "Material Adverse Effect") and no Proceeding has been instituted in any such jurisdiction revoking, limiting or curtailing or seeking to revoke, limit or curtail such power and authority or qualification.

(c) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and each of the other Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of this Agreement and each of the other Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Board of Directors or the Company's stockholders in connection herewith or therewith other than in connection with the Required Approvals. This Agreement and each other Transaction Document to which it is a party has been (or upon delivery will have been) duly executed by the Company and, when delivered in accordance with the terms hereof and thereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

10

---

(d) No Conflicts. The execution, delivery and performance by the Company of this Agreement and the other Transaction Documents to which it is a party, the issuance and sale of the Securities and the consummation by it of the transactions contemplated hereby and thereby do not and will not (i) conflict with or violate any provision of the Company's or any Subsidiary's certificate or articles of incorporation, bylaws or other organizational or charter documents, or (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any Lien upon any of the properties or assets of the Company or any Subsidiary, or give to others any rights of termination, amendment, anti-dilution or similar adjustments, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) subject to the Required Approvals, conflict with or result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as could not have or reasonably be expected to result in a Material Adverse Effect.

(e) Filings, Consents and Approvals. The Company is not required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than: (i) the filings required pursuant to Section 4.4 of this Agreement, (ii) the filing with the Commission of the Prospectus, (iii) application(s) to each applicable Trading Market for the listing of the Shares and Warrant Shares for trading thereon in the time and manner required thereby, and (iv) such filings as are required to be made under applicable state securities laws (collectively, the "Required Approvals").

(f) Issuance of the Securities; Registration. The Securities are duly authorized and, when issued and paid for in accordance with the applicable Transaction Documents, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Warrant Shares, when issued in accordance with the terms of the Warrants, will be validly issued, fully paid and nonassessable, free and clear of all Liens imposed by the Company. The Company has reserved from its duly authorized capital stock the maximum number of shares of Common Stock issuable pursuant to this Agreement and the Warrants. The Company has prepared and filed the Registration Statement in conformity with the requirements of the Securities Act, which became effective on [\_\_\_\_\_], 2025 (the "Effective Date"), including the Preliminary Prospectus, and such amendments and supplements thereto as may have been required to the date of this Agreement. The Registration Statement is effective under the Securities Act and no stop order preventing or suspending the effectiveness of the Registration Statement or suspending or preventing the use of the Preliminary Prospectus or Prospectus has been issued by the Commission and no proceedings for that purpose have been instituted or, to the knowledge of the Company, are threatened by the Commission. The Company, if required by the rules and regulations of the Commission, shall file the Prospectus with the Commission pursuant to Rule 424(b). At the time the Registration Statement and any amendments thereto became effective, at the date of this Agreement and at the Closing Date, the Registration Statement and any amendments thereto conformed and will conform in all material respects to the requirements of the Securities Act and did not and will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading; and the Pricing Prospectus and Prospectus and any amendments or supplements thereto, at the time the Pricing Prospectus and the Prospectus or any amendment or supplement thereto was issued and at the Closing Date, conformed and will conform in all material respects to the requirements of the Securities Act and did not and will not contain an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading.

11

---

(g) Capitalization. The capitalization of the Company as of the date hereof is as set forth on Schedule 3.1(g), which Schedule 3.1(g) shall also include the number of shares of Common Stock owned beneficially, and of record, by Affiliates of the Company as of the date hereof. The Company has not issued any capital stock since its most recently filed periodic report under the Exchange Act, other than pursuant to the exercise of employee stock options under the Company's stock option plans, the issuance of shares of Common Stock to employees pursuant to the Company's employee stock purchase plans and pursuant to the conversion and/or exercise of Common Stock Equivalents outstanding as of the date of the most recently filed periodic report under the Exchange Act. No Person has any right of first refusal, preemptive right, right of participation, or any similar right to participate in the transactions contemplated by the Transaction Documents. Except as a result of the purchase and sale of the Securities and as set forth on Schedule 3.1(g), there are no outstanding options, warrants, scrip rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities, rights or obligations convertible into or exercisable or exchangeable for, or giving any Person any right to subscribe for or acquire, any shares of Common Stock or the capital stock of any Subsidiary, or contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to issue additional shares of Common Stock or Common Stock Equivalents or capital stock of any Subsidiary. The issuance and sale of the Securities will not obligate the Company or any Subsidiary to issue shares of Common Stock or other securities to any Person (other than the Purchasers). There are no outstanding securities or instruments of the Company or any Subsidiary with any provision that adjusts the exercise, conversion, exchange or reset price of such security or instrument upon an issuance of securities by the Company or any Subsidiary. There are no outstanding securities or instruments of the Company or any Subsidiary that contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or may become bound to redeem a security of the Company or such Subsidiary. The Company does not have any stock appreciation rights or "phantom stock" plans or agreements or any similar plan or agreement. All of the outstanding shares of capital stock of the Company are duly authorized, validly issued, fully paid and nonassessable, have been issued in compliance with all federal and state securities laws, and none of such outstanding shares was issued in violation of any preemptive rights or similar rights to subscribe for or purchase securities. No further approval or authorization of any stockholder, the Board of Directors or others is

required for the issuance and sale of the Securities. There are no stockholders agreements, voting agreements or other similar agreements with respect to the Company's capital stock to which the Company is a party or, to the knowledge of the Company, between or among any of the Company's stockholders.

(h) SEC Reports; Financial Statements. The Company has filed all reports, schedules, forms, statements and other documents required to be filed by the Company under the Securities Act and the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, for the two years preceding the date hereof (or such shorter period as the Company was required by law or regulation to file such material) (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, together with the Registration Statement, Pricing Prospectus and the Prospectus, being collectively referred to herein as the "SEC Reports") on a timely basis or has received a valid extension of such time of filing and has filed any such SEC Reports prior to the expiration of any such extension. As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act, as applicable, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading. The Company has never been an issuer subject to Rule 144(i) under the Securities Act. The financial statements of the Company included in the SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved ("GAAP"), except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Company and its consolidated Subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial, year-end audit adjustments.

---

12

(i) Material Changes; Undisclosed Events, Liabilities or Developments. Since the date of the latest audited financial statements included within the SEC Reports, except as set forth on Schedule 3.1(i), (i) there has been no event, occurrence or development that has had or that could reasonably be expected to result in a Material Adverse Effect, (ii) the Company has not incurred any liabilities (contingent or otherwise) other than (A) trade payables and accrued expenses incurred in the ordinary course of business consistent with past practice and (B) liabilities not required to be reflected in the Company's financial statements pursuant to GAAP or disclosed in filings made with the Commission, (iii) the Company has not altered its method of accounting, (iv) the Company has not declared or made any dividend or distribution of cash or other property to its stockholders or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock and (v) the Company has not issued any equity securities to any officer, director or Affiliate, except pursuant to existing Company stock option plans. The Company does not have pending before the Commission any request for confidential treatment of information. Except for the issuance of the Securities contemplated by this Agreement or as set forth on Schedule 3.1(i), no event, liability, fact, circumstance, occurrence or development has occurred or exists or is reasonably expected to occur or exist with respect to the Company or its Subsidiaries or their respective businesses, prospects, properties, operations, assets or financial condition that would be required to be disclosed by the Company under applicable securities laws at the time this representation is made or deemed made that has not been publicly disclosed at least 1 Trading Day prior to the date that this representation is made.

(j) Litigation. Except as set forth on Schedule 3.1(j), there is no action, suit, inquiry, notice of violation, proceeding or investigation pending against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) (collectively, an "Action"). None of the Actions set forth on Schedule 3.1(j), (i) adversely affects or challenges the legality, validity or enforceability of any of the Transaction Documents or the Securities or (ii) could, if there were an unfavorable decision, have or reasonably be expected to result in a Material Adverse Effect. Neither the Company nor any Subsidiary, nor any director or officer thereof, is or has been the subject of any Action involving a claim of violation of or liability under federal or state securities laws or a claim of breach of fiduciary duty. There has not been, and to the knowledge of the Company, there is not pending or contemplated, any investigation by the Commission involving the Company or any current or former director or officer of the Company. The Commission has not issued any stop order or other order suspending the effectiveness of any registration statement filed by the Company or any Subsidiary under the Exchange Act or the Securities Act.

(k) Labor Relations. No labor dispute exists or, to the knowledge of the Company, is imminent with respect to any of the employees of the Company, which could reasonably be expected to result in a Material Adverse Effect. None of the Company's or its Subsidiaries' employees is a member of a union that relates to such employee's relationship with the Company or such Subsidiary, and neither the Company nor any of its Subsidiaries is a party to a collective bargaining agreement, and the Company and its Subsidiaries believe that their relationships with their employees are good. To the knowledge of the Company, no executive officer of the Company or any Subsidiary, is, or is now expected to be, in violation of any material term of any employment contract, confidentiality, disclosure or proprietary information agreement or non-competition agreement, or any other contract or agreement or any restrictive covenant in favor of any third party, and the continued employment of each such executive officer does not subject the Company or any of its Subsidiaries to any liability with respect to any of the foregoing matters. The Company and its Subsidiaries are in compliance with all U.S. federal, state, local and foreign laws and regulations relating to employment and employment practices, terms and conditions of employment and wages and hours, except where the failure to be in compliance could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

---

13

(l) Compliance. Neither the Company nor any Subsidiary: (i) is in default under or in violation of (and no event has occurred that has not been waived that, with notice or lapse of time or both, would result in a default by the Company or any Subsidiary under), nor has the Company or any Subsidiary received notice of a claim that it is in default under or that it is in violation of, any indenture, loan or credit agreement or any other agreement or instrument to which it is a party or by which it or any of its properties is bound (whether or not such default or violation has been waived), (ii) is in violation of any judgment, decree or order of any court, arbitrator or other governmental authority or (iii) is or has been in violation of any statute, rule, ordinance or regulation of any governmental authority, including without limitation all foreign, federal, state and local laws relating to taxes, environmental protection, occupational health and safety, product quality and safety and employment and labor matters, except in each case as could not have or reasonably be expected to result in a Material Adverse Effect.

(m) Environmental Laws. The Company and its Subsidiaries (i) are in compliance with all federal, state, local and foreign laws relating to pollution or protection of human health or the environment (including ambient air, surface water, groundwater, land surface or subsurface strata), including laws relating to emissions, discharges, releases or threatened releases of chemicals, pollutants, contaminants, or toxic or hazardous substances or wastes (collectively, "Hazardous Materials") into the environment, or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport or handling of Hazardous Materials, as well as all authorizations, codes, decrees, demands, or demand letters, injunctions, judgments, licenses, notices or notice letters, orders, permits, plans or regulations, issued, entered, promulgated or approved thereunder ("Environmental Laws"); (ii) have received all permits licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses; and (iii) are in compliance with all terms and conditions of any such permit, license or approval where in each clause (i), (ii) and (iii), the failure to so comply could be reasonably expected to have, individually or in the aggregate, a Material Adverse Effect.

(n) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as described in the SEC Reports, except where the failure to possess such permits could not reasonably be expected to result in a Material Adverse Effect ("Material Permits"), and neither the Company nor any Subsidiary has received any notice of proceedings relating to the revocation or modification of any Material Permit.

(o) Title to Assets. The Company and the Subsidiaries have good and marketable title in fee simple to all real property owned by them and good and marketable title in all personal property owned by them that is material to the business of the Company and the Subsidiaries, in each case free and clear of all Liens, except for (i) Liens as do not materially affect the value of such property and do not materially interfere with the use made and proposed to be made of such property by the Company

and the Subsidiaries and (ii) Liens for the payment of federal, state or other taxes, for which appropriate reserves have been made therefor in accordance with GAAP and, the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company and the Subsidiaries are held by them under valid, subsisting and enforceable leases with which the Company and the Subsidiaries are in compliance.

(p) Intellectual Property. The Company and the Subsidiaries have, or have rights to use, all patents, patent applications, trademarks, trademark applications, service marks, trade names, trade secrets, inventions, copyrights, licenses and other intellectual property rights and similar rights necessary or required for use in connection with their respective businesses as described in the SEC Reports and which the failure to so have could have a Material Adverse Effect (collectively, the “Intellectual Property Rights”). None of, and neither the Company nor any Subsidiary has received a notice (written or otherwise) that any of, the Intellectual Property Rights has expired, terminated or been abandoned, or is expected to expire or terminate or be abandoned, within two (2) years from the date of this Agreement. Neither the Company nor any Subsidiary has received, since the date of the latest audited financial statements included within the SEC Reports, a written notice of a claim or otherwise has any knowledge that the Intellectual Property Rights violate or infringe upon the rights of any Person, except as could not have or reasonably be expected to not have a Material Adverse Effect. To the knowledge of the Company, all such Intellectual Property Rights are enforceable and there is no existing infringement by another Person of any of the Intellectual Property Rights. The Company and its Subsidiaries have taken reasonable security measures to protect the secrecy, confidentiality and value of all of their intellectual properties, except where failure to do so could not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect.

---

14

(q) Insurance. The Company and the Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as are prudent and customary in the businesses in which the Company and the Subsidiaries are engaged, including, but not limited to, directors and officers insurance coverage at least equal to the aggregate Subscription Amount. Neither the Company nor any Subsidiary has any reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business without a significant increase in cost.

(r) Transactions With Affiliates and Employees. Except as set forth on Schedule 3.1(r), none of the officers or directors of the Company or any Subsidiary and, to the knowledge of the Company, none of the employees of the Company or any Subsidiary is presently a party to any transaction with the Company or any Subsidiary (other than for services as employees, officers and directors), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, providing for the borrowing of money from or lending of money to or otherwise requiring payments to or from any officer, director or such employee or, to the knowledge of the Company, any entity in which any officer, director, or any such employee has a substantial interest or is an officer, director, trustee, stockholder, member or partner, in each case in excess of \$120,000 other than for (i) payment of salary or consulting fees for services rendered, (ii) reimbursement for expenses incurred on behalf of the Company and (iii) other employee benefits, including stock option agreements under any stock option plan of the Company.

(s) Sarbanes-Oxley: Internal Accounting Controls. The Company and the Subsidiaries are in compliance with any and all applicable requirements of the Sarbanes-Oxley Act of 2002, as amended that are effective as of the date hereof, and any and all applicable rules and regulations promulgated by the Commission thereunder that are effective as of the date hereof and as of the Closing Date. The Company and the Subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that: (i) transactions are executed in accordance with management’s general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management’s general or specific authorization, and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. The Company and the Subsidiaries have established disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the Company and the Subsidiaries and designed such disclosure controls and procedures to ensure that information required to be disclosed by the Company in the reports it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Commission’s rules and forms. The Company’s certifying officers have evaluated the effectiveness of the disclosure controls and procedures of the Company and the Subsidiaries as of the end of the period covered by the most recently filed periodic report under the Exchange Act (such date, the “Evaluation Date”). The Company presented in its most recently filed periodic report under the Exchange Act the conclusions of the certifying officers about the effectiveness of the disclosure controls and procedures based on their evaluations as of the Evaluation Date. Since the Evaluation Date, there have been no changes in the internal control over financial reporting (as such term is defined in the Exchange Act) of the Company and its Subsidiaries that have materially affected, or is reasonably likely to materially affect, the internal control over financial reporting of the Company and its Subsidiaries.

---

15

(t) Certain Fees. Except for as set forth in the Pricing Prospectus and the Prospectus, no brokerage or finder’s fees or commissions are or will be payable by the Company or any Subsidiary to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other Person with respect to the transactions contemplated by the Transaction Documents. The Purchasers shall have no obligation with respect to any fees or with respect to any claims made by or on behalf of other Persons for fees of a type contemplated in this Section that may be due in connection with the transactions contemplated by the Transaction Documents.

(u) Investment Company. The Company is not, and is not an Affiliate of, and immediately after receipt of payment for the Securities, will not be or be an Affiliate of, an “investment company” within the meaning of the Investment Company Act of 1940, as amended. The Company shall conduct its business in a manner so that it will not become an “investment company” subject to registration under the Investment Company Act of 1940, as amended.

(v) Registration Rights. No Person has any right to cause the Company or any Subsidiary to effect the registration under the Securities Act of any securities of the Company or any Subsidiary.

(w) Listing and Maintenance Requirements. The Common Stock is registered pursuant to Section 12(b) or 12(g) of the Exchange Act, and the Company has taken no action designed to, or which to its knowledge is likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act nor has the Company received any notification that the Commission is contemplating terminating such registration. Except as set forth on Schedule 3.1(w), the Company has not, in the 12 months preceding the date hereof, received notice from any Trading Market on which the Common Stock is or has been listed or quoted to the effect that the Company is not in compliance with the listing or maintenance requirements of such Trading Market. The Company is, and has no reason to believe that it will not in the foreseeable future continue to be, in compliance with all such listing and maintenance requirements. The Common Stock is currently eligible for electronic transfer through the Depository Trust Company or another established clearing corporation and the Company is current in payment of the fees to the Depository Trust Company (or such other established clearing corporation) in connection with such electronic transfer.

(x) Application of Takeover Protections. The Company and the Board of Directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company’s certificate of incorporation (or similar charter documents) or the laws of its state of incorporation that is or could become applicable to the Purchasers as a result of the Purchasers and the Company fulfilling their obligations or exercising their rights under the Transaction Documents, including without limitation as a result of the Company’s issuance of the Securities and the Purchasers’ ownership of the Securities.

---

16



(y) Disclosure. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, the Company confirms that neither it nor any other Person acting on its behalf has provided any of the Purchasers or their agents or counsel with any information that it believes constitutes or might constitute material, non-public information which is not otherwise disclosed in the Pricing Prospectus and the Prospectus. The Company understands and confirms that the Purchasers will rely on the foregoing representation in effecting transactions in securities of the Company. All of the disclosure furnished by or on behalf of the Company to the Purchasers regarding the Company and its Subsidiaries, their respective businesses and the transactions contemplated hereby, including the Disclosure Schedules to this Agreement, is true and correct and does not contain any untrue statement of a material fact or omit to state any material fact necessary in order to make the statements made therein, in the light of the circumstances under which they were made, not misleading. The press releases disseminated by the Company during the twelve months preceding the date of this Agreement taken as a whole do not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made and when made, not misleading. The Company acknowledges and agrees that no Purchaser makes or has made any representations or warranties with respect to the transactions contemplated hereby other than those specifically set forth in Section 3.2 hereof.

(z) No Integrated Offering. Assuming the accuracy of the Purchasers' representations and warranties set forth in Section 3.2, neither the Company, nor any of its Affiliates, nor any Person acting on its or their behalf has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would cause this offering of the Securities to be integrated with prior offerings by the Company for purposes of any applicable shareholder approval provisions of any Trading Market on which any of the securities of the Company are listed or designated.

(aa) Solvency. Based on the consolidated financial condition of the Company as of the Closing Date, after giving effect to the receipt by the Company of the proceeds from the sale of the Securities hereunder, (i) the fair saleable value of the Company's assets exceeds the amount that will be required to be paid on or in respect of the Company's existing debts and other liabilities (including known contingent liabilities) as they mature, (ii) the Company's assets do not constitute unreasonably small capital to carry on its business as now conducted and as proposed to be conducted including its capital needs taking into account the particular capital requirements of the business conducted by the Company, consolidated and projected capital requirements and capital availability thereof, and (iii) the current cash flow of the Company, together with the proceeds the Company would receive, were it to liquidate all of its assets, after taking into account all anticipated uses of the cash, would be sufficient to pay all amounts on or in respect of its liabilities when such amounts are required to be paid. The Company does not intend to incur debts beyond its ability to pay such debts as they mature (taking into account the timing and amounts of cash to be payable on or in respect of its debt). The Company has no knowledge of any facts or circumstances which lead it to believe that it will file for reorganization or liquidation under the bankruptcy or reorganization laws of any jurisdiction within one year from the Closing Date. Schedule 3.1(aa) sets forth as of the date hereof all outstanding secured and unsecured Indebtedness of the Company or any Subsidiary, or for which the Company or any Subsidiary has commitments. For the purposes of this Agreement, "Indebtedness" means (x) any liabilities for borrowed money or amounts owed in excess of \$50,000 (other than trade accounts payable incurred in the ordinary course of business), (y) all guaranties, endorsements and other contingent obligations in respect of indebtedness of others, whether or not the same are or should be reflected in the Company's consolidated balance sheet (or the notes thereto), except guaranties by endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of business; and (z) the present value of any lease payments in excess of \$50,000 due under leases required to be capitalized in accordance with GAAP. Neither the Company nor any Subsidiary is in default with respect to any Indebtedness.

17

(bb) Tax Status. Except for matters that would not, individually or in the aggregate, have or reasonably be expected to result in a Material Adverse Effect, the Company and its Subsidiaries each (i) has made or filed all United States federal, state and local income and all foreign income and franchise tax returns, reports and declarations required by any jurisdiction to which it is subject, (ii) has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations and (iii) has set aside on its books provision reasonably adequate for the payment of all material taxes for periods subsequent to the periods to which such returns, reports or declarations apply. There are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction, and the officers of the Company or of any Subsidiary know of no basis for any such claim.

(cc) Foreign Corrupt Practices. Neither the Company nor any Subsidiary, nor to the knowledge of the Company or any Subsidiary, any agent or other person acting on behalf of the Company or any Subsidiary, has (i) directly or indirectly, used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to foreign or domestic political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to any foreign or domestic political parties or campaigns from corporate funds, (iii) failed to disclose fully any contribution made by the Company or any Subsidiary (or made by any person acting on its behalf of which the Company is aware) which is in violation of law, or (iv) violated in any material respect any provision of FCPA.

(dd) Accountants. The Company's accounting firm is set forth on Schedule 3.1(dd) of the Disclosure Schedules. To the knowledge and belief of the Company, such accounting firm (i) is a registered public accounting firm as required by the Exchange Act and (ii) shall express its opinion with respect to the financial statements to be included in the Company's Annual Report for the fiscal year ended December 31, 2024.

(ee) Acknowledgment Regarding Purchasers' Purchase of Securities. The Company acknowledges and agrees that each of the Purchasers is acting solely in the capacity of an arm's length purchaser with respect to the Transaction Documents and the transactions contemplated thereby. The Company further acknowledges that no Purchaser is acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the transactions contemplated thereby and any advice given by any Purchaser or any of their respective representatives or agents in connection with the Transaction Documents and the transactions contemplated thereby is merely incidental to the Purchasers' purchase of the Securities. The Company further represents to each Purchaser that the Company's decision to enter into this Agreement and the other Transaction Documents has been based solely on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

18

(ff) Acknowledgment Regarding Purchaser's Trading Activity. Anything in this Agreement or elsewhere herein to the contrary notwithstanding (except for Sections 3.2(f) and 4.13 hereof), it is understood and acknowledged by the Company that: (i) none of the Purchasers has been asked by the Company to agree, nor has any Purchaser agreed, to desist from purchasing or selling, long and/or short, securities of the Company, or "derivative" securities based on securities issued by the Company or to hold the Securities for any specified term; (ii) past or future open market or other transactions by any Purchaser, specifically including, without limitation, Short Sales or "derivative" transactions, before or after the closing of this or future private placement transactions, may negatively impact the market price of the Company's publicly-traded securities; (iii) any Purchaser, and counter-parties in "derivative" transactions to which any such Purchaser is a party, directly or indirectly, presently may have a "short" position in the Common Stock, and (iv) each Purchaser shall not be deemed to have any affiliation with or control over any arm's length counter-party in any "derivative" transaction. The Company further understands and acknowledges that (y) one or more Purchasers may engage in hedging activities at various times during the period that the Securities are outstanding, including, without limitation, during the periods that the value of the Warrant Shares deliverable with respect to Securities are being determined, and (z) such hedging activities (if any) could reduce the value of the existing stockholders' equity interests in the Company at and after the time that the hedging activities are being conducted. The Company acknowledges that such aforementioned hedging activities do not constitute a breach of any of the Transaction Documents.

(gg) Regulation M Compliance. The Company has not, and to its knowledge no one acting on its behalf has, (i) taken, directly or indirectly, any action designed to cause or to result in the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of any of the Securities, (ii) sold, bid for, purchased, or, paid any compensation for soliciting purchases of, any of the Securities, or (iii) paid or agreed to pay to any Person any compensation for soliciting another to purchase any other securities of the Company, other than, in the case of clauses (ii) and (iii), compensation paid to the Placement Agent in connection with the placement of the Securities.

(hh) FDA. As to each product subject to the jurisdiction of the U.S. Food and Drug Administration (“FDA”) under the Federal Food, Drug and Cosmetic Act, as amended, and the regulations thereunder (“FDCA”) that is manufactured, packaged, labeled, tested, distributed, sold, and/or marketed by the Company or any of its Subsidiaries (each such product, a “Pharmaceutical Product”), such Pharmaceutical Product is being manufactured, packaged, labeled, tested, distributed, sold and/or marketed by the Company in compliance with all applicable requirements under FDCA and similar laws, rules and regulations relating to registration, investigational use, premarket clearance, licensure, or application approval, good manufacturing practices, good laboratory practices, good clinical practices, product listing, quotas, labeling, advertising, record keeping and filing of reports, except where the failure to be in compliance would not have a Material Adverse Effect. There is no pending, completed or, to the Company’s knowledge, threatened, action (including any lawsuit, arbitration, or legal or administrative or regulatory proceeding, charge, complaint, or investigation) against the Company or any of its Subsidiaries, and none of the Company or any of its Subsidiaries has received any notice, warning letter or other communication from the FDA or any other governmental entity, which (i) contests the premarket clearance, licensure, registration, or approval of, the uses of, the distribution of, the manufacturing or packaging of, the testing of, the sale of, or the labeling and promotion of any Pharmaceutical Product, (ii) withdraws its approval of, requests the recall, suspension, or seizure of, or withdraws or orders the withdrawal of advertising or sales promotional materials relating to, any Pharmaceutical Product, (iii) imposes a clinical hold on any clinical investigation by the Company or any of its Subsidiaries, (iv) enjoins production at any facility of the Company or any of its Subsidiaries, (v) enters or proposes to enter into a consent decree of permanent injunction with the Company or any of its Subsidiaries, or (vi) otherwise alleges any violation of any laws, rules or regulations by the Company or any of its Subsidiaries, and which, either individually or in the aggregate, would have a Material Adverse Effect. The properties, business and operations of the Company have been and are being conducted in all material respects in accordance with all applicable laws, rules and regulations of the FDA. The Company has not been informed by the FDA that the FDA will prohibit the marketing, sale, license or use in the United States of any product proposed to be developed, produced or marketed by the Company nor has the FDA expressed any concern as to approving or clearing for marketing any product being developed or proposed to be developed by the Company.

19

(ii) Cybersecurity. (i)(x) There has been no security breach or other compromise of or relating to any of the Company’s or any Subsidiary’s information technology and computer systems, networks, hardware, software, data (including the data of its respective customers, employees, suppliers, vendors and any third party data maintained by or on behalf of it), equipment or technology (collectively, “IT Systems and Data”) and (y) the Company and the Subsidiaries have not been notified of, and has no knowledge of any event or condition that would reasonably be expected to result in, any security breach or other compromise to its IT Systems and Data; (ii) the Company and the Subsidiaries are presently in compliance with all applicable laws or statutes and all judgments, orders, rules and regulations of any court or arbitrator or governmental or regulatory authority, internal policies and contractual obligations relating to the privacy and security of IT Systems and Data and to the protection of such IT Systems and Data from unauthorized use, access, misappropriation or modification, except as would not, individually or in the aggregate, have a Material Adverse Effect; (iii) the Company and the Subsidiaries have implemented and maintained commercially reasonable safeguards to maintain and protect its material confidential information and the integrity, continuous operation, redundancy and security of all IT Systems and Data; and (iv) the Company and the Subsidiaries have implemented backup and disaster recovery technology consistent with industry standards and practices.

(jj) Stock Option Plans. Each stock option granted by the Company under the Company’s stock option plan was granted (i) in accordance with the terms of the Company’s stock option plan and (ii) with an exercise price at least equal to the fair market value of the Common Stock on the date such stock option would be considered granted under GAAP and applicable law. No stock option granted under the Company’s stock option plan has been backdated. The Company has not knowingly granted, and there is no and has been no Company policy or practice to knowingly grant, stock options prior to, or otherwise knowingly coordinate the grant of stock options with, the release or other public announcement of material information regarding the Company or its Subsidiaries or their financial results or prospects.

(kk) Compliance with Data Privacy Laws. (i) The Company and the Subsidiaries are, and at all times during the last three (3) years were, in compliance with all applicable state, federal and foreign data privacy and security laws and regulations, including, without limitation, the European Union General Data Protection Regulation (“GDPR”) (EU 2016/679) (collectively, “Privacy Laws”); (ii) the Company and the Subsidiaries have in place, comply with, and take appropriate steps reasonably designed to ensure compliance with their policies and procedures relating to data privacy and security and the collection, storage, use, disclosure, handling and analysis of Personal Data (as defined below) (the “Policies”); (iii) the Company provides accurate notice of its applicable Policies to its customers, employees, third party vendors and representatives as required by the Privacy Laws; and (iv) applicable Policies provide accurate and sufficient notice of the Company’s then-current privacy practices relating to its subject matter, and do not contain any material omissions of the Company’s then-current privacy practices, as required by Privacy Laws. “Personal Data” means (i) a natural person’s name, street address, telephone number, email address, photograph, social security number, bank information, or customer or account number; (ii) any information which would qualify as “personally identifying information” under the Federal Trade Commission Act, as amended; (iii) “personal data” as defined by GDPR; and (iv) any other piece of information that allows the identification of such natural person, or his or her family, or permits the collection or analysis of any identifiable data related to an identified person’s health or sexual orientation. (i) None of such disclosures made or contained in any of the Policies have been inaccurate, misleading, or deceptive in violation of any Privacy Laws and (ii) the execution, delivery and performance of the Transaction Documents will not result in a breach of any Privacy Laws or Policies. Neither the Company nor the Subsidiaries (i) to the knowledge of the Company, has received written notice of any actual or potential liability of the Company or the Subsidiaries under, or actual or potential violation by the Company or the Subsidiaries of, any of the Privacy Laws; (ii) is currently conducting or paying for, in whole or in part, any investigation, remediation, or other corrective action pursuant to any regulatory request or demand pursuant to any Privacy Law; or (iii) is a party to any order, decree, or agreement by or with any court or arbitrator or governmental or regulatory authority that imposed any obligation or liability under any Privacy Law.

20

(ll) Office of Foreign Assets Control. Neither the Company nor any Subsidiary nor, to the Company’s knowledge, any director, officer, agent, employee or affiliate of the Company or any Subsidiary is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“OFAC”).

(mm) U.S. Real Property Holding Corporation. The Company is not and has never been a U.S. real property holding corporation within the meaning of Section 897 of the Internal Revenue Code of 1986, as amended, and the Company shall so certify upon Purchaser’s request.

(nn) Bank Holding Company Act. Neither the Company nor any of its Subsidiaries or Affiliates is subject to the Bank Holding Company Act of 1956, as amended (the “BHCA”) and to regulation by the Board of Governors of the Federal Reserve System (the “Federal Reserve”). Neither the Company nor any of its Subsidiaries or Affiliates owns or controls, directly or indirectly, five percent (5%) or more of the outstanding shares of any class of voting securities or twenty-five percent or more of the total equity of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve. Neither the Company nor any of its Subsidiaries or Affiliates exercises a controlling influence over the management or policies of a bank or any entity that is subject to the BHCA and to regulation by the Federal Reserve.

(oo) Money Laundering. The operations of the Company and its Subsidiaries are and have been conducted at all times in compliance with applicable financial record-keeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the “Money Laundering Laws”), and no Action or Proceeding by or before any court or governmental agency, authority or body or any arbitrator involving the Company or any Subsidiary with respect to the Money Laundering Laws is pending or, to the knowledge of the Company or any Subsidiary, threatened.

3.2 Representations and Warranties of the Purchasers. Each Purchaser, for itself and for no other Purchaser, hereby represents and warrants as of the date hereof and as of the Closing Date to the Company as follows (unless as of a specific date therein, in which case they shall be accurate as of such date):

(a) Organization; Authority. Such Purchaser is either an individual or an entity duly incorporated or formed, validly existing and in good standing under the laws of the jurisdiction of its incorporation or formation with full right, corporate, partnership, limited liability company or similar power and authority to enter into and to consummate the transactions contemplated by the Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of the Transaction Documents and performance by such Purchaser of the transactions contemplated by the Transaction Documents have been duly authorized by all necessary corporate, partnership, limited liability company or similar action, as applicable, on the part of such Purchaser. Each Transaction Document to which it is a party has been duly executed by such Purchaser, and when delivered by such Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of such Purchaser, enforceable against it in accordance with its terms, except: (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

---

21

(b) Understandings or Arrangements. Such Purchaser is acquiring the Securities as principal for its own account and has no direct or indirect arrangement or understandings with any other persons to distribute or regarding the distribution of such Securities (this representation and warranty not limiting such Purchaser's right to sell the Securities pursuant to the Registration Statement and the Prospectus or otherwise in compliance with applicable federal and state securities laws). Such Purchaser is acquiring the Securities hereunder in the ordinary course of its business.

(c) Purchaser Status. At the time such Purchaser was offered the Securities, it was, and as of the date hereof it is, and on each date on which it exercises any Warrants, it will be an "accredited investor" as defined in Rule 501(a)(1), (a)(2), (a)(3), (a)(7), (a)(8), (a)(9), (a)(12), or (a)(13) under the Securities Act.

(d) Experience of Such Purchaser. Such Purchaser, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. Such Purchaser is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

(e) Access to Information. Such Purchaser acknowledges that it has had the opportunity to review the Transaction Documents (including all exhibits and schedules thereto) and the SEC Reports and has been afforded, (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and its financial condition, results of operations, business, properties, management and prospects sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment decision with respect to the investment. Such Purchaser acknowledges and agrees that neither the Placement Agent nor any Affiliate of the Placement Agent has provided such Purchaser with any information or advice with respect to the Securities nor is such information or advice necessary or desired. Neither the Placement Agent nor any Affiliate has made or makes any representation as to the Company or the quality of the Securities and the Placement Agent and any Affiliate may have acquired non-public information with respect to the Company which such Purchaser agrees need not be provided to it. In connection with the issuance of the Securities to such Purchaser, neither the Placement Agent nor any of its Affiliates has acted as a financial advisor or fiduciary to such Purchaser.

---

22

(f) Certain Transactions and Confidentiality. Other than consummating the transactions contemplated hereunder, such Purchaser has not, nor has any Person acting on behalf of or pursuant to any understanding with such Purchaser, directly or indirectly executed any purchases or sales, including Short Sales, of the securities of the Company during the period commencing as of the time that such Purchaser first received a term sheet (written or oral) from the Company or any other Person representing the Company setting forth the material pricing terms of the transactions contemplated hereunder and ending immediately prior to the execution hereof. Notwithstanding the foregoing, in the case of a Purchaser that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's assets, the representation set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement. Other than to other Persons party to this Agreement or to such Purchaser's representatives, including, without limitation, its officers, directors, partners, legal and other advisors, employees, agents and Affiliates, such Purchaser has maintained the confidentiality of all disclosures made to it in connection with this transaction (including the existence and terms of this transaction). Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

The Company acknowledges and agrees that the representations contained in this Section 3.2 shall not modify, amend or affect such Purchaser's right to rely on the Company's representations and warranties contained in this Agreement or any representations and warranties contained in any other Transaction Document or any other document or instrument executed and/or delivered in connection with this Agreement or the consummation of the transactions contemplated hereby. Notwithstanding the foregoing, for the avoidance of doubt, nothing contained herein shall constitute a representation or warranty, or preclude any actions, with respect to locating or borrowing shares in order to effect Short Sales or similar transactions in the future.

#### ARTICLE IV. OTHER AGREEMENTS OF THE PARTIES

4.1 Warrant Shares. If all or any portion of a Warrant is exercised at a time when there is an effective registration statement to cover the issuance or resale of the Warrant Shares or if the Warrant is exercised via cashless exercise, the Warrant Shares issued pursuant to any such exercise shall be issued free of all legends. If at any time following the date hereof the Registration Statement (or any subsequent registration statement registering the sale or resale of the Warrant Shares) is not effective or is not otherwise available for the sale or resale of the Warrant Shares, the Company shall immediately notify the holders of the Warrants in writing that such registration statement is not then effective and thereafter shall promptly notify such holders when the registration statement is effective again and available for the sale or resale of the Warrant Shares (it being understood and agreed that the foregoing shall not limit the ability of the Company to issue, or any Purchaser to sell, any of the Warrant Shares in compliance with applicable federal and state securities laws). The Company shall use best efforts to keep a registration statement (including the Registration Statement) registering the issuance or resale of the Warrant Shares effective during the term of the Warrants.

---

23

4.2 Furnishing of Information. Until the earliest of the time that (i) no Purchaser owns Securities or (ii) the Warrants have expired, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act even if the Company is not then subject to the reporting requirements of the Exchange Act.

4.3 Integration. The Company shall not sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that would be integrated with the offer or sale of the Securities for purposes of the rules and regulations of any Trading Market such that it would require shareholder approval prior to the closing of such other transaction unless shareholder approval is obtained before the closing of such subsequent transaction.

4.4 Securities Laws Disclosure; Publicity. The Company shall (a) by the Disclosure Time, issue a press release disclosing the material terms of the transactions contemplated hereby, and (b) file a Current Report on Form 8-K, including the Transaction Documents as exhibits thereto, with the Commission within the time required by the Exchange Act. From and after the issuance of such press release, the Company represents to the Purchasers that it shall have publicly disclosed all material, non-public information delivered to any of the Purchasers by the Company or any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, in connection with the transactions contemplated by the Transaction Documents. In addition, effective upon the issuance of such press release, the Company acknowledges and agrees that any and all confidentiality or similar obligations under any agreement, whether written or oral, between the Company, any of its Subsidiaries or any of their respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, on the one hand, and any of the Purchasers or any of their Affiliates on the other hand, shall terminate and be of no further force or effect. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company. The Company and each Purchaser shall consult with each other in issuing any other press releases with respect to the transactions contemplated hereby, and neither the Company nor any Purchaser shall issue any such press release nor otherwise make any such public statement without the prior consent of the Company, with respect to any press release of any Purchaser, or without the prior consent of each Purchaser, with respect to any press release of the Company, which consent shall not unreasonably be withheld or delayed, except if such disclosure is required by law, in which case the disclosing party shall promptly provide the other party with prior notice of such public statement or communication. Notwithstanding the foregoing, the Company shall not publicly disclose the name of any Purchaser, or include the name of any Purchaser in any filing with the Commission or any regulatory agency or Trading Market, without the prior written consent of such Purchaser, except (a) as required by federal securities law in connection with the filing of final Transaction Documents with the Commission and (b) to the extent such disclosure is required by law or Trading Market regulations, in which case the Company shall provide the Purchasers with prior notice of such disclosure permitted under this clause (b) and reasonably cooperate with such Purchaser regarding such disclosure.

---

24

4.5 Shareholder Rights Plan. No claim will be made or enforced by the Company or, with the consent of the Company, any other Person, that any Purchaser is an “Acquiring Person” under any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or similar anti-takeover plan or arrangement in effect or hereafter adopted by the Company, or that any Purchaser could be deemed to trigger the provisions of any such plan or arrangement, by virtue of receiving Securities under the Transaction Documents or under any other agreement between the Company and the Purchasers.

4.6 Non-Public Information. Except with respect to the material terms and conditions of the transactions contemplated by the Transaction Documents, which shall be disclosed pursuant to Section 4.4, the Company covenants and agrees that neither it, nor any other Person acting on its behalf will provide any Purchaser or its agents or counsel with any information that constitutes, or the Company reasonably believes constitutes, material non-public information, unless prior thereto such Purchaser shall have consented in writing to the receipt of such information and agreed in writing with the Company to keep such information confidential. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company. To the extent that the Company, any of its Subsidiaries, or any of their respective officers, directors, agents, employees or Affiliates delivers any material, non-public information to a Purchaser without such Purchaser’s consent, the Company hereby covenants and agrees that such Purchaser shall not have any duty of confidentiality to the Company, any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, or a duty to the Company, any of its Subsidiaries or any of their respective officers, directors, employees, Affiliates or agents, including, without limitation, the Placement Agent, not to trade on the basis of, such material, non-public information, provided that the Purchaser shall remain subject to applicable law. To the extent that any notice provided pursuant to any Transaction Document constitutes, or contains, material, non-public information regarding the Company or any Subsidiaries, the Company shall simultaneously with the delivery of such notice file such notice with the Commission pursuant to a Current Report on Form 8-K. The Company understands and confirms that each Purchaser shall be relying on the foregoing covenant in effecting transactions in securities of the Company.

4.7 Use of Proceeds. Except as set forth in the Pricing Prospectus and the Prospectus, the Company shall use the net proceeds from the sale of the Securities hereunder for working capital purposes and shall not use such proceeds: (a) for the satisfaction of any portion of the Company’s debt (other than payment of trade payables in the ordinary course of the Company’s business and prior practices), (b) for the redemption of any Common Stock or Common Stock Equivalents, (c) for the settlement of any outstanding litigation or (d) in violation of FCPA or OFAC regulations.

---

25

4.8 Indemnification of Purchasers. Subject to the provisions of this Section 4.8, the Company will indemnify and hold each Purchaser and its directors, officers, shareholders, members, partners, employees and agents (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title), each Person who controls such Purchaser (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, shareholders, agents, members, partners or employees (and any other Persons with a functionally equivalent role of a Person holding such titles notwithstanding a lack of such title or any other title) of such controlling persons (each, a “Purchaser Party”) harmless from any and all losses, liabilities, obligations, claims, contingencies, damages, costs and expenses, including all judgments, amounts paid in settlements, court costs and reasonable attorneys’ fees and costs of investigation that any such Purchaser Party may suffer or incur as a result of or relating to (a) any breach of any of the representations, warranties, covenants or agreements made by the Company in this Agreement or in the other Transaction Documents or (b) any action instituted against the Purchaser Parties in any capacity, or any of them or their respective Affiliates, by any stockholder of the Company who is not an Affiliate of such Purchaser Party, with respect to any of the transactions contemplated by the Transaction Documents (unless such action is solely based upon a material breach of such Purchaser Party’s representations, warranties or covenants under the Transaction Documents or any agreements or understandings such Purchaser Party may have with any such stockholder or any violations by such Purchaser Party of state or federal securities laws or any conduct by such Purchaser Party which is finally judicially determined to constitute fraud, gross negligence or willful misconduct. If any action shall be brought against any Purchaser Party in respect of which indemnity may be sought pursuant to this Agreement, such Purchaser Party shall promptly notify the Company in writing, and, the Company shall have the right to assume the defense thereof with counsel of its own choosing reasonably acceptable to the Purchaser Party. Any Purchaser Party shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Purchaser Party except to the extent that (i) the employment thereof has been specifically authorized by the Company in writing, (ii) the Company has failed after a reasonable period of time to assume such defense and to employ counsel or (iii) in such action there is, in the reasonable opinion of counsel a material conflict on any material issue between the position of the Company and the position of such Purchaser Party, in which case the Company shall be responsible for the reasonable fees and expenses of no more than one such separate counsel. The Company will not be liable to any Purchaser Party under this Agreement (y) for any settlement by a Purchaser Party effected without the Company’s prior written consent, which shall not be unreasonably withheld or delayed; or (z) to the extent, but only to the extent that a loss, claim, damage or liability is attributable to any Purchaser Party’s breach of any of the representations, warranties, covenants or agreements made by such Purchaser Party in this Agreement or in the other Transaction Documents. The indemnification required by this Section 4.8 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or are incurred. The indemnity agreements contained herein shall be in addition to any cause of action or similar right of any Purchaser Party against the Company or others and any liabilities the Company may be subject to pursuant to law.

4.9 Reservation of Common Stock. As of the date hereof, the Company has reserved and the Company shall continue to reserve and keep available at all times, free of preemptive rights, a sufficient number of shares of Common Stock for the purpose of enabling the Company to issue Shares pursuant to this Agreement and Warrant Shares pursuant to any exercise of the Warrants.

---

26

4.10 Listing of Common Stock. The Company hereby agrees to use best efforts to maintain the listing or quotation of the Common Stock on the Trading Market on which it is currently listed, and concurrently with the Closing, the Company shall apply to list or quote all of the Shares and Warrant Shares on such Trading Market and promptly secure the listing of all of the Shares and Warrant Shares on such Trading Market. The Company further agrees, if the Company applies to have the Common Stock

traded on any other Trading Market, it will then include in such application all of the Shares and Warrant Shares, and will take such other action as is necessary to cause all of the Shares and Warrant Shares to be listed or quoted on such other Trading Market as promptly as possible. The Company will then take all action reasonably necessary to continue the listing and trading of its Common Stock on a Trading Market and will comply in all respects with the Company's reporting, filing and other obligations under the bylaws or rules of the Trading Market. The Company agrees to maintain the eligibility of the Common Stock for electronic transfer through the Depository Trust Company or another established clearing corporation, including, without limitation, by timely payment of fees to the Depository Trust Company or such other established clearing corporation in connection with such electronic transfer.

#### 4.11 Subsequent Equity Sales.

(a) From the date hereof until sixty (60) days after the Closing Date, neither the Company nor any Subsidiary shall (i) issue, enter into any agreement to issue or announce the issuance or proposed issuance of any shares of Common Stock or Common Stock Equivalents or (ii) file any registration statement or any amendment or supplement thereto, other than the Prospectus, or filing a registration statement on Form S-8 in connection with any employee benefit plan.

(b) From the date hereof until one (1) year after the Closing Date, the Company shall be prohibited from effecting or entering into an agreement to effect any issuance by the Company or any of its Subsidiaries of Common Stock or Common Stock Equivalents (or a combination of units thereof) involving a Variable Rate Transaction. "Variable Rate Transaction" means a transaction in which the Company (i) issues or sells any debt or equity securities that are convertible into, exchangeable or exercisable for, or include the right to receive additional shares of Common Stock either (A) at a conversion price, exercise price or exchange rate or other price that is based upon and/or varies with the trading prices of or quotations for the shares of Common Stock at any time after the initial issuance of such debt or equity securities, or (B) with a conversion, exercise or exchange price that is subject to being reset at some future date after the initial issuance of such debt or equity security or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for the Common Stock or (ii) enters into, or effects a transaction under, any agreement, including, but not limited to, an equity line of credit or an "at-the-market offering", whereby the Company may issue securities at a future determined price regardless of whether shares pursuant to such agreement have actually been issued and regardless of whether such agreement is subsequently canceled. Any Purchaser shall be entitled to obtain injunctive relief against the Company to preclude any such issuance, which remedy shall be in addition to any right to collect damages.

(c) Notwithstanding the foregoing, this Section 4.11 shall not apply in respect of an Exempt Issuance, except that no Variable Rate Transaction shall be an Exempt Issuance.

27

4.12 Equal Treatment of Purchasers. No consideration (including any modification of this Agreement) shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of this Agreement unless the same consideration is also offered to all of the parties to this Agreement. For clarification purposes, this provision constitutes a separate right granted to each Purchaser by the Company and negotiated separately by each Purchaser, and is intended for the Company to treat the Purchasers as a class and shall not in any way be construed as the Purchasers acting in concert or as a group with respect to the purchase, disposition or voting of Securities or otherwise.

4.13 Certain Transactions and Confidentiality. Each Purchaser, severally and not jointly with the other Purchasers, covenants that neither it nor any Affiliate acting on its behalf or pursuant to any understanding with it will execute any purchases or sales, including Short Sales of any of the Company's securities during the period commencing with the execution of this Agreement and ending at such time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4. Each Purchaser, severally and not jointly with the other Purchasers, covenants that until such time as the transactions contemplated by this Agreement are publicly disclosed by the Company pursuant to the initial press release as described in Section 4.4, such Purchaser will maintain the confidentiality of the existence and terms of this transaction and the information included in the Disclosure Schedules (other than as disclosed to its legal and other representatives). Notwithstanding the foregoing and notwithstanding anything contained in this Agreement to the contrary, the Company expressly acknowledges and agrees that (i) no Purchaser makes any representation, warranty or covenant hereby that it will not engage in effecting transactions in any securities of the Company after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4, (ii) no Purchaser shall be restricted or prohibited from effecting any transactions in any securities of the Company in accordance with applicable securities laws from and after the time that the transactions contemplated by this Agreement are first publicly announced pursuant to the initial press release as described in Section 4.4 and (iii) no Purchaser shall have any duty of confidentiality or duty not to trade in the securities of the Company to the Company, any of its Subsidiaries, or any of their respective officers, directors, employees, Affiliates, or agent, including, without limitation, the Placement Agent, after the issuance of the initial press release as described in Section 4.4. Notwithstanding the foregoing, in the case of a Purchaser that is a multi-managed investment vehicle whereby separate portfolio managers manage separate portions of such Purchaser's assets and the portfolio managers have no direct knowledge of the investment decisions made by the portfolio managers managing other portions of such Purchaser's assets, the covenant set forth above shall only apply with respect to the portion of assets managed by the portfolio manager that made the investment decision to purchase the Securities covered by this Agreement.

28

4.14 Capital Changes. Until the one year anniversary of the Closing Date, the Company shall not undertake a reverse or forward stock split or reclassification of the Common Stock without the prior written consent of the Purchasers holding a majority in interest of the Shares and Pre-Funded Warrants other than a reverse stock split that is required, in the good faith determination of the Board of Directors, to maintain the listing of the Common Stock on the Trading Market.

4.15 Exercise Procedures. The form of Notice of Exercise included in the Warrants set forth the totality of the procedures required of the Purchasers in order to exercise the Warrants. No additional legal opinion, other information or instructions shall be required of the Purchasers to exercise their Warrants. Without limiting the preceding sentences, no ink-original Notice of Exercise shall be required, nor shall any medallion guarantee (or other type of guarantee or notarization) of any Notice of Exercise form be required in order to exercise the Warrants. The Company shall honor exercises of the Warrants and shall deliver Warrant Shares in accordance with the terms, conditions and time periods set forth in the Transaction Documents.

4.16 Lock-Up Agreements. The Company shall not amend, modify, waive or terminate any provision of any of the Lock-Up Agreements except to extend the term of the lock-up period and shall enforce the provisions of each Lock-Up Agreement in accordance with its terms. If any party to a Lock-Up Agreement breaches any provision of a Lock-Up Agreement, the Company shall promptly use its best efforts to seek specific performance of the terms of such Lock-Up Agreement.

## ARTICLE V. MISCELLANEOUS

5.1 Termination. This Agreement may be terminated by any Purchaser, as to such Purchaser's obligations hereunder only and without any effect whatsoever on the obligations between the Company and the other Purchasers, by written notice to the other parties, if the Closing has not been consummated on or before the fifth (5<sup>th</sup>) Trading Day following the date hereof; provided, however, that no such termination will affect the right of any party to sue for any breach by any other party (or parties).

5.2 Fees and Expenses. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, counsel, accountants and other experts, if any, and all other expenses incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement. The Company shall pay all Transfer Agent fees (including, without limitation, any fees required for same-day processing of any instruction letter delivered by the Company and any exercise notice delivered by a Purchaser), stamp taxes and other taxes and duties levied in connection with the delivery of any Securities to the Purchasers.

5.3 Entire Agreement. The Transaction Documents, together with the exhibits and schedules thereto, the Pricing Prospectus and the Prospectus, contain the entire understanding of the parties with respect to the subject matter hereof and thereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules.

29

5.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of: (a) the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto at or prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the time of transmission, if such notice or communication is delivered via email attachment at the email address as set forth on the signature pages attached hereto on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the second (2<sup>nd</sup>) Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth on the signature pages attached hereto.

5.5 Amendments; Waivers. No provision of this Agreement may be waived, modified, supplemented or amended except in a written instrument signed, in the case of an amendment, by the Company and Purchasers which purchased at least 50.1% in interest of the Shares and Pre-Funded Warrants based on the initial Subscription Amounts hereunder (or, prior to the Closing, the Company and each Purchaser) or, in the case of a waiver, by the party against whom enforcement of any such waived provision is sought, provided that if any amendment, modification or waiver disproportionately and adversely impacts a Purchaser (or multiple Purchasers), the consent of such disproportionately impacted Purchaser (or at least 50.1% in interest of such multiple Purchasers) shall also be required. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of any party to exercise any right hereunder in any manner impair the exercise of any such right. Any proposed amendment or waiver that disproportionately, materially and adversely affects the rights and obligations of any Purchaser relative to the comparable rights and obligations of the other Purchasers shall require the prior written consent of such adversely affected Purchaser. Any amendment effected in accordance with this Section 5.5 shall be binding upon each Purchaser and holder of Securities and the Company.

5.6 Headings. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof.

5.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of each Purchaser (other than by merger). Any Purchaser may assign any or all of its rights under this Agreement to any Person to whom such Purchaser assigns or transfers any Securities, provided that such transferee agrees in writing to be bound, with respect to the transferred Securities, by the provisions of the Transaction Documents that apply to the "Purchasers."

5.8 No Third-Party Beneficiaries. The Placement Agent shall be the third party beneficiary of the representations, warranties, and covenants of the Company in this Agreement and the representations, warranties, and covenants of the Purchasers in this Agreement. This Agreement is intended for the benefit of the parties hereto and their respective successors and permitted assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other Person, except as otherwise set forth in Section 4.8 and this Section 5.8.

30

5.9 Governing Law. All questions concerning the construction, validity, enforcement and interpretation of the Transaction Documents shall be governed by and construed and enforced in accordance with the internal laws of the State of New York, without regard to the principles of conflicts of law thereof. Each party agrees that all legal Proceedings concerning the interpretations, enforcement and defense of the transactions contemplated by this Agreement and any other Transaction Documents (whether brought against a party hereto or its respective affiliates, directors, officers, shareholders, partners, members, employees or agents) shall be commenced exclusively in the state and federal courts sitting in the City of New York. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of New York, Borough of Manhattan for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein (including with respect to the enforcement of any of the Transaction Documents), and hereby irrevocably waives, and agrees not to assert in any Action or Proceeding, any claim that it is not personally subject to the jurisdiction of any such court, that such Action or Proceeding is improper or is an inconvenient venue for such Proceeding. Each party hereby irrevocably waives personal service of process and consents to process being served in any such Action or Proceeding by mailing a copy thereof via registered or certified mail or overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any other manner permitted by law. If any party shall commence an Action or Proceeding to enforce any provisions of the Transaction Documents, then, in addition to the obligations of the Company under Section 4.8, the prevailing party in such Action or Proceeding shall be reimbursed by the non-prevailing party for its reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such Action or Proceeding.

5.10 Survival. The representations and warranties contained herein shall survive the Closing and the delivery of the Securities.

5.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to each other party, it being understood that the parties need not sign the same counterpart. In the event that any signature is delivered by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such ".pdf" signature page were an original thereof.

5.12 Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their commercially reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

31

5.13 Rescission and Withdrawal Right. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) any of the other Transaction Documents, whenever any Purchaser exercises a right, election, demand or option under a Transaction Document and the Company does not timely perform its related obligations within the periods therein provided, then such Purchaser may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights; provided, however, that, in the case of a rescission of an exercise of a Warrant, the applicable Purchaser shall be required to return any shares of Common Stock subject to any such rescinded exercise notice concurrently with the return to such Purchaser of the aggregate exercise price paid to the Company for such shares and the restoration of such Purchaser's right to acquire such shares pursuant to such Purchaser's Warrant (including, issuance of a replacement warrant certificate evidencing such restored right).

5.14 Replacement of Securities. If any certificate or instrument evidencing any Securities is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof (in the case of mutilation), or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction. The applicant for a new certificate or instrument under such circumstances

shall also pay any reasonable third-party costs (including customary indemnity) associated with the issuance of such replacement Securities.

5.15 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, each of the Purchasers and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations contained in the Transaction Documents and hereby agree to waive and not to assert in any Action for specific performance of any such obligation the defense that a remedy at law would be adequate.

5.16 Payment Set Aside. To the extent that the Company makes a payment or payments to any Purchaser pursuant to any Transaction Document or a Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other Person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

5.17 Independent Nature of Purchasers' Obligations and Rights. The obligations of each Purchaser under any Transaction Document are several and not joint with the obligations of any other Purchaser, and no Purchaser shall be responsible in any way for the performance or non-performance of the obligations of any other Purchaser under any Transaction Document. Nothing contained herein or in any other Transaction Document, and no action taken by any Purchaser pursuant hereto or thereto, shall be deemed to constitute the Purchasers as a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Purchasers are in any way acting in concert or as a group with respect to such obligations or the transactions contemplated by the Transaction Documents. Each Purchaser shall be entitled to independently protect and enforce its rights including, without limitation, the rights arising out of this Agreement or out of the other Transaction Documents, and it shall not be necessary for any other Purchaser to be joined as an additional party in any Proceeding for such purpose. Each Purchaser has been represented by its own separate legal counsel in its review and negotiation of the Transaction Documents. For reasons of administrative convenience only, each Purchaser and its respective counsel have chosen to communicate with the Company through EGS. EGS does not represent any of the Purchasers and only represents the Placement Agent. The Company has elected to provide all Purchasers with the same terms and Transaction Documents for the convenience of the Company and not because it was required or requested to do so by any of the Purchasers. It is expressly understood and agreed that each provision contained in this Agreement and in each other Transaction Document is between the Company and a Purchaser, solely, and not between the Company and the Purchasers collectively and not between and among the Purchasers.

5.18 Liquidated Damages. The Company's obligations to pay any partial liquidated damages or other amounts owing under the Transaction Documents is a continuing obligation of the Company and shall not terminate until all unpaid partial liquidated damages and other amounts have been paid notwithstanding the fact that the instrument or security pursuant to which such partial liquidated damages or other amounts are due and payable shall have been canceled.

5.19 Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a Business Day, then such action may be taken or such right may be exercised on the next succeeding Business Day.

5.20 Construction. The parties agree that each of them and/or their respective counsel have reviewed and had an opportunity to revise the Transaction Documents and, therefore, the normal rule of construction to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the interpretation of the Transaction Documents or any amendments thereto. In addition, each and every reference to share prices and shares of Common Stock in any Transaction Document shall be subject to adjustment for reverse and forward stock splits, stock dividends, stock combinations and other similar transactions of the Common Stock that occur after the date of this Agreement.

**5.21 WAIVER OF JURY TRIAL, IN ANY ACTION, SUIT, OR PROCEEDING IN ANY JURISDICTION BROUGHT BY ANY PARTY AGAINST ANY OTHER PARTY, THE PARTIES EACH KNOWINGLY AND INTENTIONALLY, TO THE GREATEST EXTENT PERMITTED BY APPLICABLE LAW, HEREBY ABSOLUTELY, UNCONDITIONALLY, IRREVOCABLY AND EXPRESSLY WAIVES FOREVER TRIAL BY JURY.**

*(Signature Pages Follow)*

IN WITNESS WHEREOF, the parties hereto have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

**GT BIOPHARMA, INC.**

Address for Notice:

By: \_\_\_\_\_  
Name: Michael Breen  
Title: Executive Chairman & Chief Executive Officer (Interim)

8000 Marina Blvd, Suite 100 |  
Brisbane, CA 94005  
E-Mail: mb@gtbiopharma.com

With a copy to (which shall not constitute notice):

Baker & McKenzie LLP  
1900 Pearl Street, Suite 1500  
Dallas, Texas 75201 Attention: Roger Bivans  
Email: Roger.Bivans@bakermckenzie.com

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK  
SIGNATURE PAGE FOR PURCHASER FOLLOWS]

[PURCHASER SIGNATURE PAGES TO GTBP SECURITIES PURCHASE AGREEMENT]

IN WITNESS WHEREOF, the undersigned have caused this Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

Name of Purchaser: \_\_\_\_\_

Signature of Authorized Signatory of Purchaser: \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Email Address of Authorized Signatory: \_\_\_\_\_

Address for Notice to Purchaser:

Address for Delivery of Warrants to Purchaser (if not same as address for notice):

Subscription Amount: \$ \_\_\_\_\_

Shares: \_\_\_\_\_

Pre-Funded Warrant Shares: \_\_\_\_\_ Beneficial Ownership Blocker  4.99% or  9.99%

Common Warrant Shares: \_\_\_\_\_ Beneficial Ownership Blocker  4.99% or  9.99%

EIN Number: \_\_\_\_\_

Notwithstanding anything contained in this Agreement to the contrary, by checking this box (i) the obligations of the above-signed to purchase the securities set forth in this Agreement to be purchased from the Company by the above-signed, and the obligations of the Company to sell such securities to the above-signed, shall be unconditional and all conditions to Closing shall be disregarded, (ii) the Closing shall occur on the first (1<sup>st</sup>) Trading Day following the date of this Agreement and (iii) any condition to Closing contemplated by this Agreement (but prior to being disregarded by clause (i) above) that required delivery by the Company or the above-signed of any agreement, instrument, certificate or the like or purchase price (as applicable) shall no longer be a condition and shall instead be an unconditional obligation of the Company or the above-signed (as applicable) to deliver such agreement, instrument, certificate or the like or purchase price (as applicable) to such other party on the Closing Date.

[SIGNATURE PAGES CONTINUE]



## PLACEMENT AGENCY AGREEMENT

[ ], 2025

Roth Capital Partners, LLC  
888 San Clemente Drive, Suite 400  
Newport Beach, CA 92660

Ladies and Gentlemen:

**Introduction.** Subject to the terms and conditions herein (this “Agreement”), GT Biopharma, Inc., a Delaware corporation (the “Company”), hereby agrees to sell up to an aggregate of \$[ ] of registered securities of the Company consisting of [ ] shares (the “Shares”) of the Company’s common stock, \$0.001 par value per share (the “Common Stock”), pre-funded warrants to purchase up to [ ] shares of Common Stock (the “Pre-Funded Warrants”) and the shares of Common Stock issuable upon exercise of the Pre-Funded Warrants, the “Pre-Funded Warrant Shares”), and (iii) warrants to purchase up to [ ] shares of Common Stock (the “Common Warrants”) and together with the Pre-Funded Warrants, the “Warrants,” the shares of Common Stock issuable upon exercise of the Common Warrants, the “Common Warrant Shares,” and, together with the Pre-Funded Warrant Shares, the “Warrant Shares” and, collectively with the Shares and Warrants, the “Securities”) directly to various investors (each, an “Investor” and, collectively, the “Investors”) through Roth Capital Partners, LLC (“Roth” or the “Placement Agent”) as placement agent. The documents executed and delivered by the Company and the Investors in connection with the Offering (as defined below), including, without limitation, one or more securities purchase agreements (the “Purchase Agreement(s)”), shall be collectively referred to herein as the “Transaction Documents”. The Placement Agent may retain other brokers or dealers to act as sub-agents or selected-dealers on its behalf in connection with the Offering.

The Company hereby confirms its agreement with the Placement Agent as follows:

### Section 1. Agreement to Act as Placement Agent

(a) On the basis of the representations, warranties and agreements of the Company herein contained, and subject to all the terms and conditions of this Agreement, the Placement Agent shall be the exclusive placement agent in connection with the offering and sale by the Company of the Securities pursuant to the Company’s registration statement on Form S-1, as amended (File No. 333-284032) (the “Registration Statement”) with the terms of such offering (the “Offering”) to be subject to market conditions and negotiations between the Company, the Placement Agent and the prospective Investors. The Placement Agent will act on a reasonable best efforts basis and the Company agrees and acknowledges that there is no guarantee of the successful placement of the Securities, or any portion thereof, in the prospective Offering. Under no circumstances will the Placement Agent or any of its “Affiliates” (as defined below) be obligated to underwrite or purchase any of the Securities for its own account or otherwise provide any financing. The Placement Agent shall act solely as the Company’s agent and not as principal. The Placement Agent shall have no authority to bind the Company with respect to any prospective offer to purchase Securities and the Company shall have the sole right to accept offers to purchase Securities and may reject any such offer, in whole or in part. Subject to the terms and conditions hereof, payment of the purchase price for, and delivery of, the Securities shall be made at one or more closings (each a “Closing” and the date on which each Closing occurs, a “Closing Date”). As compensation for services rendered, on each Closing Date, the Company shall pay to the Placement Agent the fees and expenses set forth below:

(i). A cash fee of up to 6.0% of the gross proceeds received by the Company from the sale of the Securities at the closing of the Offering.

---

(ii). Such number of Common Stock purchase warrants (the “Placement Agent Warrants”) to the Placement Agent or its designees at each Closing to purchase shares of Common Stock up to 6.0% of the sum of (i) the aggregate number of Shares sold in the Offering and (ii) the aggregate number of Pre-Funded Warrant Shares issuable upon exercise of the Pre-Funded Warrants. The Placement Agent Warrants shall have substantially the same terms as the Common Warrants issued to the Investors in the Offering except that the exercise price shall be 125% of the public offering price per share and shall have an expiration date of 5 years from the commencement of sales of the Offering. The Placement Agent Warrants shall otherwise contain the provisions as required by Financial Industry Regulatory Authority (“FINRA”).

(iii). The Company also agrees to reimburse Placement Agent’s expenses (with supporting invoices/receipts) of \$100,000 payable immediately upon the Closing of the Offering.

(b) The term of the Placement Agent’s exclusive engagement will be until the completion of the Offering; provided, however, that a party hereto may terminate the engagement with respect to itself at any time upon 10 days written notice to the other parties. Notwithstanding anything to the contrary contained herein, the provisions concerning confidentiality, indemnification and contribution contained herein and the Company’s obligations contained in the indemnification provisions will survive any expiration or termination of this Agreement, and the Company’s obligation to pay fees actually earned and payable and to reimburse expenses actually incurred and reimbursable pursuant to Section 1 hereof and which are permitted to be reimbursed under FINRA Rule 5110(g)(4)(A), will survive any expiration or termination of this Agreement. Nothing in this Agreement shall be construed to limit the ability of the Placement Agent or its Affiliates to pursue, investigate, analyze, invest in, or engage in investment banking, financial advisory or any other business relationship with Persons (as defined below) other than the Company. As used herein (i) “Persons” means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind and (ii) “Affiliate” means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person as such terms are used in and construed under Rule 405 under the Securities Act of 1933, as amended (the “Securities Act”).

---

**Section 2. Representations, Warranties and Covenants of the Company.** The Company hereby represents, warrants and covenants to the Placement Agent as of the date hereof, and as of each Closing Date, as follows:

(a) Securities Law Filings. The Company has filed with the Securities and Exchange Commission (the “Commission”) the Registration Statement under the Securities Act, which was declared effective on [ ], 2025 for the registration of the Securities under the Securities Act. Following the determination of pricing among the Company and the prospective Investors introduced to the Company by Placement Agent, the Company will file with the Commission pursuant to Rules 430A and 424(b) under the Securities Act, and the rules and regulations (the “Rules and Regulations”) of the Commission promulgated thereunder, a final prospectus relating to the placement of the Securities, their respective pricings and the plan of distribution thereof and will advise the Placement Agent of all further information (financial and other) with respect to the Company required to be set forth therein. Such registration statement, at any given time, including the exhibits thereto filed at such time, as amended at such time, is hereinafter called the “Registration Statement”; such prospectus in the form in which it appears in the Registration Statement at the time of effectiveness is hereinafter called the “Preliminary Prospectus”; and the final prospectus, in the form in which it will be filed with the Commission pursuant to Rule 424(b) (including the Preliminary Prospectus as it may be amended or supplemented) is hereinafter called the “Final Prospectus.” The Registration Statement at the time it originally became effective is hereinafter called the “Original Registration Statement.” Any reference in this Agreement to the Registration Statement, the Original Registration Statement, the Preliminary

Prospectus or the Final Prospectus shall be deemed to refer to and include the documents incorporated by reference therein (the “Incorporated Documents”), if any, which were or are filed under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), at any given time, as the case may be; and any reference in this Agreement to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement, the Original Registration Statement, the Preliminary Prospectus or the Final Prospectus shall be deemed to refer to and include the filing of any document under the Exchange Act after the date of this Agreement, or the issue date of the Preliminary Prospectus or the Final Prospectus, as the case may be, deemed to be incorporated therein by reference. All references in this Agreement to financial statements and schedules and other information which is “contained,” “included,” “described,” “referenced,” “set forth” or “stated” in the Registration Statement, the Preliminary Prospectus or the Final Prospectus (and all other references of like import) shall be deemed to mean and include all such financial statements and schedules and other information which is or is deemed to be incorporated by reference in the Registration Statement, the Preliminary Prospectus or the Final Prospectus, as the case may be. As used in this paragraph and elsewhere in this Agreement, “Time of Sale Disclosure Package” means the Preliminary Prospectus, any securities purchase agreement executed and delivered by the Company and the Investors in connection with the Offering, and any issuer free writing prospectus as defined in Rule 433 of the Act (each, an “Issuer Free Writing Prospectus”), if any, that the parties hereto shall hereafter expressly agree in writing to treat as part of the Time of Sale Disclosure Package. The term “any Prospectus” shall mean, as the context requires, the Preliminary Prospectus, the Final Prospectus, and any supplement to either thereof. The Company has not received any notice that the Commission has issued or intends to issue a stop order suspending the effectiveness of the Registration Statement or the use of any Prospectus or intends to commence a proceeding for any such purpose.

---

(b) Assurances. The Original Registration Statement and any amendment thereto, (and any further documents to be filed with the Commission) contains all exhibits and schedules as required by the Securities Act. Each of the Registration Statement and any post-effective amendment thereto, at the time it became effective, complied in all material respects with the Securities Act and the applicable Rules and Regulations and did not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading. The Preliminary Prospectus, and the Final Prospectus, each as of its respective date, comply or will comply in all material respects with the Securities Act and the applicable Rules and Regulations. Each of the Preliminary Prospectus and the Final Prospectus, as amended or supplemented, did not and will not contain as of the date thereof any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The Incorporated Documents, when they were filed with the Commission, conformed in all material respects to the requirements of the Exchange Act and the applicable Rules and Regulations promulgated thereunder, and none of such documents, when they were filed with the Commission, contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein (with respect to Incorporated Documents incorporated by reference in the Preliminary Prospectus or Final Prospectus), in light of the circumstances under which they were made not misleading. No post-effective amendment to the Registration Statement reflecting any facts or events arising after the date thereof which represent, individually or in the aggregate, a fundamental change in the information set forth therein is required to be filed with the Commission. Except for this Agreement, there are no documents required to be filed with the Commission in connection with the transaction contemplated hereby that (x) have not been filed as required pursuant to the Securities Act or (y) will not be filed within the requisite time period. Except for the Transaction Documents, there are no contracts or other documents required to be described in the Preliminary Prospectus or Final Prospectus, or to be filed as exhibits or schedules to the Registration Statement, which have not been described or filed as required.

(c) Offering Materials. Neither the Company nor any of its directors and officers has distributed and none of them will distribute, prior to each Closing Date, any offering material in connection with the offering and sale of the Securities other than the Time of Sale Disclosure Package.

(d) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by this Agreement and the Time of Sale Disclosure Package and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of each of this Agreement by the Company and the consummation by it of the transactions contemplated hereby and thereby and under the Final Prospectus have been duly authorized by all necessary action on the part of the Company and no further action is required by the Company, the Company’s Board of Directors (the “Board of Directors”) or the Company’s stockholders in connection therewith other than in connection with the Required Approvals (as defined in the Purchase Agreements). This Agreement has been duly executed by the Company and, when delivered in accordance with the terms hereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except (i) as limited by general equitable principles and applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors’ rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) insofar as indemnification and contribution provisions may be limited by applicable law.

---

(e) No Conflicts. The execution, delivery and performance by the Company of this Agreement and the transactions contemplated pursuant to the Time of Sale Disclosure Package, the issuance and sale of the Securities and the consummation by it of the transactions contemplated hereby and thereby to which it is a party do not and will not (i) conflict with or violate any provision of the Company’s or any Subsidiary’s certificate or articles of incorporation, bylaws or other organizational or charter documents, or (ii) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any Lien upon any of the properties or assets of the Company or any Subsidiary, or give to others any rights of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) subject to the Required Approvals, conflict with or result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as could not have or reasonably be expected to result in a Material Adverse Effect (as defined in the Purchase Agreements).

(f) Certificates. Any certificate signed by an officer of the Company and delivered to the Placement Agent or to counsel for the Placement Agent shall be deemed to be a representation and warranty by the Company to the Placement Agent as to the matters set forth therein.

(g) Reliance. The Company acknowledges that the Placement Agent will rely upon the accuracy and truthfulness of the foregoing representations and warranties and hereby consents to such reliance.

(h) Forward-Looking Statements. No forward-looking statements (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) contained in the Time of Sale Disclosure Package have been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

---

(i) Statistical or Market-Related Data. Any statistical, industry-related and market-related data included or incorporated by reference in the Time of Sale Disclosure Package are based on or derived from sources that the Company reasonably and in good faith believes to be reliable and accurate, and such data agree with the sources from which they are derived.

(j) FINRA Affiliations. There are no affiliations with any FINRA member firm that is participating in the Offering among the Company’s officers, directors or, to the knowledge of the Company, any five percent (5%) or greater stockholder of the Company.

(k) Representations, Warranties and Covenants Incorporated by Reference. Each of the representations, warranties and covenants (together with any related disclosure schedules thereto) made to the Investors in the Purchase Agreements is hereby incorporated herein by reference (as though fully restated herein) and is hereby made to, and

in favor of, the Placement Agent.

**Section 3. Delivery and Payment.** Each Closing shall occur at the offices of Ellenoff Grossman & Schole LLP, 1345 Avenue of the Americas, New York, New York 10105 (“Placement Agent Counsel”) (or at such other place as shall be agreed upon by the Placement Agent and the Company). Subject to the terms and conditions hereof, at each Closing payment of the purchase price for the Securities sold on such Closing Date shall be made by Federal Funds wire transfer, against delivery of such Securities, and such Securities shall be registered in such name or names and shall be in such denominations, as the Placement Agent may request at least one business day before the time of purchase.

Deliveries of the documents with respect to the purchase of the Securities, if any, shall be made at the offices of Placement Agent Counsel. All actions taken at a Closing shall be deemed to have occurred simultaneously.

**Section 4. Covenants and Agreements of the Company.** The Company further covenants and agrees with the Placement Agent as follows:

(a) Registration Statement Matters. The Company will advise the Placement Agent promptly after it receives notice thereof of the time when any amendment to the Registration Statement has been filed or becomes effective or any supplement to the Preliminary Prospectus or the Final Prospectus has been filed and will furnish the Placement Agent with copies thereof. The Company will file promptly all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Section 13(a), 14 or 15(d) of the Exchange Act subsequent to the date of any Prospectus and for so long as the delivery of a prospectus is required in connection with the Offering. The Company will advise the Placement Agent, promptly after it receives notice thereof (i) of any request by the Commission to amend the Registration Statement or to amend or supplement any Prospectus or for additional information, and (ii) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or any post-effective amendment thereto or any order directed at any Incorporated Document, if any, or any amendment or supplement thereto or any order preventing or suspending the use of the Preliminary Prospectus or the Final Prospectus or any prospectus supplement or any amendment or supplement thereto or any post-effective amendment to the Registration Statement, of the suspension of the qualification of the Securities for offering or sale in any jurisdiction, of the institution or threatened institution of any proceeding for any such purpose, or of any request by the Commission for the amending or supplementing of the Registration Statement or a Prospectus or for additional information. The Company shall use its best efforts to prevent the issuance of any such stop order or prevention or suspension of such use. If the Commission shall enter any such stop order or order or notice of prevention or suspension at any time, the Company will use its best efforts to obtain the lifting of such order at the earliest possible moment, or will file a new registration statement and use its best efforts to have such new registration statement declared effective as soon as practicable. Additionally, the Company agrees that it shall comply with the provisions of Rules 424(b), 430A, 430B and 430C, as applicable, under the Securities Act, including with respect to the timely filing of documents thereunder, and will use its reasonable efforts to confirm that any filings made by the Company under such Rule 424(b) are received in a timely manner by the Commission.

---

(b) Blue Sky Compliance. The Company will cooperate with the Placement Agent and the Investors in endeavoring to qualify the Securities for sale under the securities laws of such jurisdictions (United States and foreign) as the Placement Agent and the Investors may reasonably request and will make such applications, file such documents, and furnish such information as may be reasonably required for that purpose, provided the Company shall not be required to qualify as a foreign corporation or to file a general consent to service of process in any jurisdiction where it is not now so qualified or required to file such a consent, and provided further that the Company shall not be required to produce any new disclosure document. The Company will, from time to time, prepare and file such statements, reports and other documents as are or may be required to continue such qualifications in effect for so long a period as the Placement Agent may reasonably request for distribution of the Securities. The Company will advise the Placement Agent promptly of the suspension of the qualification or registration of (or any such exemption relating to) the Securities for offering, sale or trading in any jurisdiction or any initiation or threat of any proceeding for any such purpose, and in the event of the issuance of any order suspending such qualification, registration or exemption, the Company shall use its commercially reasonable best efforts to obtain the withdrawal thereof at the earliest possible moment.

(c) Amendments and Supplements to a Prospectus and Other Matters. The Company will comply with the Securities Act and the Exchange Act, and the rules and regulations of the Commission thereunder, so as to permit the completion of the distribution of the Securities as contemplated in this Agreement, the Incorporated Documents and any Prospectus. If during the period in which a prospectus is required by law to be delivered in connection with the distribution of Securities contemplated by the Incorporated Documents or any Prospectus (the “Prospectus Delivery Period”), any event shall occur as a result of which, in the judgment of the Company or in the opinion of the Placement Agent or counsel for the Placement Agent, it becomes necessary to amend or supplement the Incorporated Documents or any Prospectus in order to make the statements therein, in the light of the circumstances under which they were made, as the case may be, not misleading, or if it is necessary at any time to amend or supplement the Incorporated Documents or any Prospectus or to file under the Exchange Act any Incorporated Document to comply with any law, the Company will promptly prepare and file with the Commission, and furnish at its own expense to the Placement Agent and to dealers, an appropriate amendment to the Registration Statement or supplement to the Registration Statement, the Incorporated Documents or any Prospectus that is necessary in order to make the statements in the Incorporated Documents and any Prospectus as so amended or supplemented, in the light of the circumstances under which they were made, as the case may be, not misleading, or so that the Registration Statement, the Incorporated Documents or any Prospectus, as so amended or supplemented, will comply with law. Before amending the Registration Statement or supplementing the Incorporated Documents or any Prospectus in connection with the Offering, the Company will furnish the Placement Agent with a copy of such proposed amendment or supplement and will not file any such amendment or supplement to which the Placement Agent reasonably objects.

---

(d) Copies of any Amendments and Supplements to a Prospectus. The Company will furnish the Placement Agent, without charge, during the period beginning on the date hereof and ending on the later of the last Closing Date of the Offering, as many copies of any Prospectus or prospectus supplement and any amendments and supplements thereto, as the Placement Agent may reasonably request.

(e) Free Writing Prospectus. The Company covenants that it will not, unless it obtains the prior written consent of the Placement Agent, make any offer relating to the Shares that would constitute an Issuer Free Writing Prospectus or that would otherwise constitute a “free writing prospectus” (as defined in Rule 405 of the Securities Act) required to be filed by the Company with the Commission or retained by the Company under Rule 433 of the Securities Act. In the event that the Placement Agent expressly consents in writing to any such free writing prospectus (a “Permitted Free Writing Prospectus”), the Company covenants that it shall (i) treat each Permitted Free Writing Prospectus as an Issuer Free Writing Prospectus, and (ii) comply with the requirements of Rule 164 and 433 of the Securities Act applicable to such Permitted Free Writing Prospectus, including in respect of timely filing with the Commission, legending and record keeping.

(f) Transfer Agent. The Company will maintain, at its expense, a registrar and transfer agent for the Common Stock.

(g) Earnings Statement. As soon as practicable and in accordance with applicable requirements under the Securities Act, but in any event not later than 18 months after the last Closing Date, the Company will make generally available to its security holders and to the Placement Agent an earnings statement, covering a period of at least 12 consecutive months beginning after the last Closing Date, that satisfies the provisions of Section 11(a) and Rule 158 under the Securities Act.

(h) Periodic Reporting Obligations. During the Prospectus Delivery Period, the Company will duly file, on a timely basis, with the Commission and the Trading Market (as defined in the Purchase Agreements) all reports and documents required to be filed under the Exchange Act within the time periods and in the manner required by the Exchange Act.

---

(i) Additional Documents. The Company will enter into any subscription, purchase or other customary agreements as the Placement Agent or the Investors deem necessary or appropriate to consummate the Offering, all of which will be in form and substance reasonably acceptable to the Placement Agent and the Investors. The Company agrees that the Placement Agent may rely upon, and is a third-party beneficiary of, the representations and warranties, and applicable covenants, set forth in any such purchase, subscription or other agreement with Investors in the Offering.

(j) No Manipulation of Price. The Company will not take, directly or indirectly, any action designed to cause or result in, or that has constituted or might reasonably be expected to constitute, the stabilization or manipulation of the price of any securities of the Company.

(k) Acknowledgment. The Company acknowledges that any advice given by the Placement Agent to the Company is solely for the benefit and use of the Board of Directors of the Company and may not be used, reproduced, disseminated, quoted or referred to, without the Placement Agent's prior written consent.

(l) Announcement of Offering. The Company acknowledges and agrees that the Placement Agent may, subsequent to the Closing, make public its involvement with the Offering.

(m) Reliance on Others. The Company confirms that it will rely on its own counsel and accountants for legal and accounting advice.

(n) Research Matters. By entering into this Agreement, the Placement Agent does not provide any promise, either explicitly or implicitly, of favorable or continued research coverage of the Company and the Company hereby acknowledges and agrees that the Placement Agent's selection as a placement agent for the Offering was in no way conditioned, explicitly or implicitly, on the Placement Agent providing favorable or any research coverage of the Company. In accordance with FINRA Rule 2711(e), the parties acknowledge and agree that the Placement Agent has not directly or indirectly offered favorable research, a specific rating or a specific price target, or threatened to change research, a rating or a price target, to the Company or inducement for the receipt of business or compensation.

**Section 5. Conditions of the Obligations of the Placement Agent**. The obligations of the Placement Agent hereunder shall be subject to the accuracy of the representations and warranties on the part of the Company set forth in Section 2 hereof, in each case as of the date hereof and as of each Closing Date as though then made, to the timely performance by the Company of its covenants and other obligations hereunder on and as of such dates, and to each of the following additional conditions:

(a) Accountants' Comfort Letter. On the date hereof, the Placement Agent shall have received, and the Company shall have caused to be delivered to the Placement Agent, a letter from Weinberg & Company, P.A. (the independent registered public accounting firm of the Company), addressed to the Placement Agent, dated as of the date hereof, in form and substance satisfactory to the Placement Agent. The letter shall not disclose any change in the condition (financial or other), earnings, operations, business or prospects of the Company from that set forth in the Incorporated Documents or the applicable Prospectus or prospectus supplement, which, in the Placement Agent's sole judgment, is material and adverse and that makes it, in the Placement Agent's sole judgment, impracticable or inadvisable to proceed with the Offering of the Securities as contemplated by such Prospectus.

---

(b) Compliance with Registration Requirements; No Stop Order; No Objection from the FINRA. Each Prospectus (in accordance with Rule 424(b)) and "free writing prospectus" (as defined in Rule 405 of the Securities Act), if any, shall have been duly filed with the Commission, as appropriate; no stop order suspending the effectiveness of the Registration Statement or any part thereof shall have been issued and no proceeding for that purpose shall have been initiated or threatened by the Commission; no order preventing or suspending the use of any Prospectus shall have been issued and no proceeding for that purpose shall have been initiated or threatened by the Commission; no order having the effect of ceasing or suspending the distribution of the Securities or any other securities of the Company shall have been issued by any securities commission, securities regulatory authority or stock exchange and no proceedings for that purpose shall have been instituted or shall be pending or, to the knowledge of the Company, contemplated by any securities commission, securities regulatory authority or stock exchange; all requests for additional information on the part of the Commission shall have been complied with; and the FINRA shall have raised no objection to the fairness and reasonableness of the placement terms and arrangements.

(c) Corporate Proceedings. All corporate proceedings and other legal matters in connection with this Agreement, the Registration Statement and each Prospectus, and the registration, sale and delivery of the Securities, shall have been completed or resolved in a manner reasonably satisfactory to the Placement Agent's counsel, and such counsel shall have been furnished with such papers and information as it may reasonably have requested to enable such counsel to pass upon the matters referred to in this Section 5.

(d) No Material Adverse Effect. Subsequent to the execution and delivery of this Agreement and prior to each Closing Date, in the Placement Agent's sole judgment after consultation with the Company, there shall not have occurred any Material Adverse Effect.

(e) Opinion of Counsel for the Company. The Placement Agent shall have received on each Closing Date the favorable opinion of legal counsel to the Company, dated as of such Closing Date, including, without limitation, a negative assurance letter addressed to the Placement Agent and in form and substance satisfactory to the Placement Agent.

(f) Officers' Certificate. The Placement Agent shall have received on each Closing Date a certificate of the Company, dated as of such Closing Date, signed by the Chief Executive Officer and Chief Financial Officer of the Company, to the effect that, and the Placement Agent shall be satisfied that, the signers of such certificate have reviewed the Registration Statement, the Incorporated Documents, the Preliminary Prospectus and the Final Prospectus, and the Transaction Documents and to the further effect that:

---

(i). The representations and warranties of the Company in the Purchase Agreement and this Agreement are true and correct, as if made on and as of such Closing Date, and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to such Closing Date;

(ii). No stop order suspending the effectiveness of the Registration Statement or the use of any Prospectus has been issued and no proceedings for that purpose have been instituted or are pending or, to the Company's knowledge, threatened under the Securities Act; no order having the effect of ceasing or suspending the distribution of the Securities or any other securities of the Company has been issued by any securities commission, securities regulatory authority or stock exchange in the United States and no proceedings for that purpose have been instituted or are pending or, to the knowledge of the Company, contemplated by any securities commission, securities regulatory authority or stock exchange in the United States;

(iii). When the Registration Statement became effective, at the time of sale, and at all times subsequent thereto up to the delivery of such certificate, the Registration Statement and the Incorporated Documents, if any, when such documents became effective or were filed with the Commission, and any Prospectus, contained all material information required to be included therein by the Securities Act and the Exchange Act and the applicable rules and regulations of the Commission thereunder, as the case may be, and in all material respects conformed to the requirements of the Securities Act and the Exchange Act and the applicable rules and regulations of the Commission thereunder, as the case may be, and the Registration Statement and the Incorporated Documents, if any, and any Prospectus, did not and do not include any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading (provided, however, that the preceding representations and warranties contained in this paragraph (iii) shall not apply to any statements or omissions made in reliance upon and in conformity with information furnished in writing to the Company by the Placement Agent expressly for use therein) and, since the effective date of the Registration Statement, there has occurred no event required by the Securities Act and the rules and

regulations of the Commission thereunder to be set forth in the Incorporated Documents which has not been so set forth; and

(iv). Subsequent to the respective dates as of which information is given in the Registration Statement, the Incorporated Documents and any Prospectus, there has not been: (a) any Material Adverse Effect; (b) any transaction that is material to the Company and the Subsidiaries taken as a whole, except transactions entered into in the ordinary course of business; (c) any obligation, direct or contingent, that is material to the Company and the Subsidiaries taken as a whole, incurred by the Company or any Subsidiary, except obligations incurred in the ordinary course of business; (d) any material change in the capital stock (except changes thereto resulting from the exercise of outstanding stock options or warrants) or outstanding indebtedness of the Company or any Subsidiary; (e) any dividend or distribution of any kind declared, paid or made on the capital stock of the Company; or (f) any loss or damage (whether or not insured) to the property of the Company or any Subsidiary which has been sustained or will have been sustained which has a Material Adverse Effect.

---

(g) Bring-down Comfort Letter. On each Closing Date, the Placement Agent shall have received from Weinberg & Company, P.A., or such other independent registered public accounting firm of the Company, a letter dated as of such Closing Date, in form and substance reasonably satisfactory to the Placement Agent, to the effect that they reaffirm the statements made in the letter furnished pursuant to subsection (a) of this Section 5, except that the specified date referred to therein for the carrying out of procedures shall be no more than one business day prior to such Closing Date.

(h) Lock-Up Agreements. On the date hereof, the Placement Agent shall have received the executed lock-up agreement, in the form attached as Exhibit A in the Purchase Agreements, from each of the directors, officers and 10% and greater stockholders of the Company.

(i) Stock Exchange Listing. The Common Stock shall be registered under the Exchange Act and shall be listed on the Trading Market, and the Company shall not have taken any action designed to terminate, or likely to have the effect of terminating, the registration of the Common Stock under the Exchange Act or delisting or suspending from trading the Common Stock from the Trading Market, nor shall the Company have received any information suggesting that the Commission or the Trading Market is contemplating terminating such registration or listing.

(j) Additional Documents. On or before each Closing Date, the Placement Agent and Placement Agent Counsel shall have received such information and documents as they may reasonably require for the purposes of enabling them to pass upon the issuance and sale of the Securities as contemplated herein, or in order to evidence the accuracy of any of the representations and warranties, or the satisfaction of any of the conditions or agreements, herein contained.

If any condition specified in this Section 5 is not satisfied when and as required to be satisfied, this Agreement may be terminated by the Placement Agent by notice to the Company at any time on or prior to a Closing Date, which termination shall be without liability on the part of any party to any other party, except that Section 6 (Payment of Expenses), Section 7 (Indemnification and Contribution) and Section 8 (Representations and Indemnities to Survive Delivery) shall at all times be effective and shall survive such termination.

---

**Section 6. Payment of Expenses.** The Company agrees to pay all costs, fees and expenses incurred by the Company in connection with the performance of its obligations hereunder and in connection with the transactions contemplated hereby, including, without limitation: (i) all expenses incident to the issuance, delivery and qualification of the Securities (including all printing and engraving costs); (ii) all fees and expenses of the registrar and transfer agent of the Common Stock; (iii) all necessary issue, transfer and other stamp taxes in connection with the issuance and sale of the Securities; (iv) all fees and expenses of the Company's counsel, independent public or certified public accountants and other advisors; (v) all costs and expenses incurred in connection with the preparation, printing, filing, shipping and distribution of the Registration Statement (including financial statements, exhibits, schedules, consents and certificates of experts), the Preliminary Prospectus, the Final Prospectus, and all amendments and supplements thereto, and this Agreement; (vi) all filing fees, reasonable attorneys' fees and expenses incurred by the Company or the Placement Agent in connection with qualifying or registering (or obtaining exemptions from the qualification or registration of) all or any part of the Securities for offer and sale under the state securities or blue sky laws or the securities laws of any other country, and, if requested by the Placement Agent, preparing and printing a "Blue Sky Survey," an "International Blue Sky Survey" or other memorandum, and any supplements thereto, advising the Placement Agent of such qualifications, registrations and exemptions; (vii) if applicable, the filing fees incident to the review and approval by the FINRA of the Placement Agent's participation in the Offering; (viii) the fees and expenses associated with including the Shares and Warrant Shares on the Trading Market; (ix) all costs and expenses incident to the travel and accommodation of the Company's and the Placement Agent's employees on the "roadshow," if any; and (x) all other fees, costs and expenses referred to in Part II of the Registration Statement.

#### **Section 7. Indemnification and Contribution.**

(a) The Company agrees to indemnify and hold harmless the Placement Agent, its affiliates and each person controlling the Placement Agent (within the meaning of Section 15 of the Securities Act), and the directors, officers, agents and employees of the Placement Agent, its affiliates and each such controlling person (the Placement Agent, and each such entity or person, an "Indemnified Person") from and against any losses, claims, damages, judgments, assessments, costs and other liabilities (collectively, the "Liabilities"), and shall reimburse each Indemnified Person for all fees and expenses (including the reasonable fees and expenses of one counsel for all Indemnified Persons, except as otherwise expressly provided herein) (collectively, the "Expenses") as they are incurred by an Indemnified Person in investigating, preparing, pursuing or defending any Actions (as defined in the Purchase Agreements), whether or not any Indemnified Person is a party thereto, (i) caused by, or arising out of or in connection with, any untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, any Incorporated Document, or any Prospectus or by any omission or alleged omission to state therein a material fact necessary to make the statements therein, in light of the circumstances under which they were made, not misleading (other than untrue statements or alleged untrue statements in, or omissions or alleged omissions from, information relating to an Indemnified Person furnished in writing by or on behalf of such Indemnified Person expressly for use in the Incorporated Documents) or (ii) otherwise arising out of or in connection with advice or services rendered or to be rendered by any Indemnified Person pursuant to this Agreement, the transactions contemplated thereby or any Indemnified Person's actions or inactions in connection with any such advice, services or transactions; provided, however, that, in the case of clause (ii) only, the Company shall not be responsible for any Liabilities or Expenses of any Indemnified Person that are finally judicially determined to have resulted solely from such Indemnified Person's (x) gross negligence or willful misconduct in connection with any of the advice, actions, inactions or services referred to above or (y) use of any offering materials or information concerning the Company in connection with the offer or sale of the Securities in the Offering which were not authorized for such use by the Company and which use constitutes gross negligence or willful misconduct. The Company also agrees to reimburse each Indemnified Person for all Expenses as they are incurred in connection with enforcing such Indemnified Person's rights under this Agreement.

---

(b) Upon receipt by an Indemnified Person of actual notice of an Action against such Indemnified Person with respect to which indemnity may be sought under this Agreement, such Indemnified Person shall promptly notify the Company in writing; provided that failure by any Indemnified Person so to notify the Company shall not relieve the Company from any liability which the Company may have on account of this indemnity or otherwise to such Indemnified Person, except to the extent the Company shall have been prejudiced by such failure. The Company shall, if requested by the Placement Agent, assume the defense of any such Action including the employment of counsel reasonably satisfactory to the Placement Agent, which counsel may also be counsel to the Company. Any Indemnified Person shall have the right to employ separate counsel in any such action and participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnified Person unless: (i) the Company has failed promptly to assume the defense and employ counsel or (ii) the named parties to any such Action (including any impleaded parties) include such Indemnified Person and the Company, and such Indemnified Person shall have been advised in the reasonable opinion of counsel that there is an actual conflict

of interest that prevents the counsel selected by the Company from representing both the Company (or another client of such counsel) and any Indemnified Person; provided that the Company shall not in such event be responsible hereunder for the fees and expenses of more than one firm of separate counsel for all Indemnified Persons in connection with any Action or related Actions, in addition to any local counsel. The Company shall not be liable for any settlement of any Action effected without its written consent (which shall not be unreasonably withheld). In addition, the Company shall not, without the prior written consent of the Placement Agent (which shall not be unreasonably withheld), settle, compromise or consent to the entry of any judgment in or otherwise seek to terminate any pending or threatened Action in respect of which indemnification or contribution may be sought hereunder (whether or not such Indemnified Person is a party thereto) unless such settlement, compromise, consent or termination includes an unconditional release of each Indemnified Person from all Liabilities arising out of such Action for which indemnification or contribution may be sought hereunder. The indemnification required hereby shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as such expense, loss, damage or liability is incurred and is due and payable.

(c) In the event that the foregoing indemnity is unavailable to an Indemnified Person other than in accordance with this Agreement, the Company shall contribute to the Liabilities and Expenses paid or payable by such Indemnified Person in such proportion as is appropriate to reflect (i) the relative benefits to the Company, on the one hand, and to the Placement Agent and any other Indemnified Person, on the other hand, of the matters contemplated by this Agreement or (ii) if the allocation provided by the immediately preceding clause is not permitted by applicable law, not only such relative benefits but also the relative fault of the Company, on the one hand, and the Placement Agent and any other Indemnified Person, on the other hand, in connection with the matters as to which such Liabilities or Expenses relate, as well as any other relevant equitable considerations; provided that in no event shall the Company contribute less than the amount necessary to ensure that all Indemnified Persons, in the aggregate, are not liable for any Liabilities and Expenses in excess of the amount of fees actually received by the Placement Agent pursuant to this Agreement. For purposes of this paragraph, the relative benefits to the Company, on the one hand, and to the Placement Agent on the other hand, of the matters contemplated by this Agreement shall be deemed to be in the same proportion as (a) the total value paid or contemplated to be paid to or received or contemplated to be received by the Company in the transaction or transactions that are within the scope of this Agreement, whether or not any such transaction is consummated, bears to (b) the fees paid to the Placement Agent under this Agreement. Notwithstanding the above, no person guilty of fraudulent misrepresentation within the meaning of Section 11(f) of the Securities Act, as amended, shall be entitled to contribution from a party who was not guilty of fraudulent misrepresentation.

---

(d) The Company also agrees that no Indemnified Person shall have any liability (whether direct or indirect, in contract or tort or otherwise) to the Company for or in connection with advice or services rendered or to be rendered by any Indemnified Person pursuant to this Agreement, the transactions contemplated thereby or any Indemnified Person's actions or inactions in connection with any such advice, services or transactions except for Liabilities (and related Expenses) of the Company that are finally judicially determined to have resulted solely from such Indemnified Person's gross negligence or willful misconduct in connection with any such advice, actions, inactions or services.

(e) The reimbursement, indemnity and contribution obligations of the Company set forth herein shall apply to any modification of this Agreement and shall remain in full force and effect regardless of any termination of, or the completion of any Indemnified Person's services under or in connection with, this Agreement.

**Section 8. Representations and Indemnities to Survive Delivery.** The respective indemnities, agreements, representations, warranties and other statements of the Company or any person controlling the Company, of its officers, and of the Placement Agent set forth in or made pursuant to this Agreement will remain in full force and effect, regardless of any investigation made by or on behalf of the Placement Agent, the Company, or any of its or their partners, officers or directors or any controlling person, as the case may be, and will survive delivery of and payment for the Securities sold hereunder and any termination of this Agreement. A successor to a Placement Agent, or to the Company, its directors or officers or any person controlling the Company, shall be entitled to the benefits of the indemnity, contribution and reimbursement agreements contained in this Agreement.

**Section 9. Notices.** All communications hereunder shall be in writing and shall be mailed, hand delivered or e-mailed and confirmed to the parties hereto as follows:

If to the Placement Agent to the address set forth above, attention: Aaron Gurewitz, email: [ecm@roth.com](mailto:ecm@roth.com)

---

With a copy to:

Ellenoff Grossman & Schole LLP  
1345 Avenue of the Americas, 11th Floor  
New York, New York 10105  
E-mail: [capmks@egslp.com](mailto:capmks@egslp.com)

If to the Company:

GT Biopharma, Inc.  
315 Montgomery Street, 10th Floor  
San Francisco, CA 94104e-mail: [mb@gtbiopharma.com](mailto:mb@gtbiopharma.com)  
Attention: Michael Breen

With a copy to:

Baker & McKenzie LLP  
1900 Pearl Street, Suite 1500  
Dallas, Texas 75201  
e-mail: [Roger.Bivans@bakermckenzie.com](mailto:Roger.Bivans@bakermckenzie.com)  
Attention: Roger Bivans

Any party hereto may change the address for receipt of communications by giving written notice to the others.

**Section 10. Successors.** This Agreement will inure to the benefit of and be binding upon the parties hereto, and to the benefit of the employees, officers and directors and controlling persons referred to in Section 7 hereof, and to their respective successors, and personal representative, and no other person will have any right or obligation hereunder.

**Section 11. Partial Unenforceability.** The invalidity or unenforceability of any section, paragraph or provision of this Agreement shall not affect the validity or enforceability of any other section, paragraph or provision hereof. If any Section, paragraph or provision of this Agreement is for any reason determined to be invalid or unenforceable, there shall be deemed to be made such minor changes (and only such minor changes) as are necessary to make it valid and enforceable.

---

**Section 12. Governing Law Provisions.** This Agreement shall be deemed to have been made and delivered in New York City and both this Agreement and the transactions contemplated hereby shall be governed as to validity, interpretation, construction, effect and in all other respects by the internal laws of the State of New York, without regard to the conflict of laws principles thereof. Each of the Placement Agent and the Company: (i) agrees that any legal suit, action or proceeding arising out of or relating to this Agreement and/or the transactions contemplated hereby shall be instituted exclusively in New York Supreme Court, County of New York, or in the United States District Court for the Southern District of New York, (ii) waives any objection which it may have or hereafter to the venue of any such suit, action or proceeding, and (iii) irrevocably consents to the jurisdiction of the New York Supreme Court, County of New York, and the United States District Court for the Southern District of New York in any such suit, action or proceeding. Each of the Placement Agent and the Company further agrees to accept and acknowledge service of any and all process which may be served in any such suit, action or proceeding in the New York Supreme Court, County of New York, or in the United States District Court for the Southern District of New York and agrees that service of process upon the Company mailed by certified mail to the Company's address shall be deemed in every respect effective service of process upon the Company, in any such suit, action or proceeding, and service of process upon the Placement Agent mailed by certified mail to the Placement Agent's address shall be deemed in every respect effective service process upon the Placement Agent, in any such suit, action or proceeding. Notwithstanding any provision of this Agreement to the contrary, the Company agrees that neither the Placement Agent nor its affiliates, and the respective officers, directors, employees, agents and representatives of the Placement Agent, its affiliates and each other person, if any, controlling the Placement Agent or any of its affiliates, shall have any liability (whether direct or indirect, in contract or tort or otherwise) to the Company for or in connection with the engagement and transaction described herein except for any such liability for losses, claims, damages or liabilities incurred by us that are finally judicially determined to have resulted from the willful misconduct or gross negligence of such individuals or entities. If either party shall commence an action or proceeding to enforce any provision of this Agreement, then the prevailing party in such action or proceeding shall be reimbursed by the other party for its reasonable attorney's fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding.

**Section 13. General Provisions.**

(a) This Agreement constitutes the entire agreement of the parties to this Agreement and supersedes all prior written or oral and all contemporaneous oral agreements, understandings and negotiations with respect to the subject matter hereof. Notwithstanding anything herein to the contrary, the Engagement Agreement, dated November 27, 2024, as amended (the "Engagement Agreement"), between the Company and Roth Capital Partners, LLC shall continue to be effective and the terms therein shall continue to survive and be enforceable by the Placement Agent in accordance with its terms, provided that, in the event of a conflict between the terms of the Engagement Agreement and this Agreement, the terms of this Agreement shall prevail]. This Agreement may be executed in two or more counterparts, each one of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument. This Agreement may not be amended or modified unless in writing by all of the parties hereto, and no condition herein (express or implied) may be waived unless waived in writing by each party whom the condition is meant to benefit. Section headings herein are for the convenience of the parties only and shall not affect the construction or interpretation of this Agreement.

(b) The Company acknowledges that in connection with the offering of the Securities: (i) the Placement Agent has acted at arms length, is not agent of, and owes no fiduciary duties to the Company or any other person, (ii) the Placement Agent owes the Company only those duties and obligations set forth in this Agreement and (iii) the Placement Agent may have interests that differ from those of the Company. The Company waives to the full extent permitted by applicable law any claims it may have against the Placement Agent arising from an alleged breach of fiduciary duty in connection with the offering of the Securities.

[The remainder of this page has been intentionally left blank.]

---

If the foregoing is in accordance with your understanding of our agreement, please sign below whereupon this instrument, along with all counterparts hereof, shall become a binding agreement in accordance with its terms.

Very truly yours,

**GT BIOPHARMA, INC.,**  
a Delaware corporation

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

The foregoing Placement Agency Agreement is hereby confirmed and accepted as of the date first above written.

**ROTH CAPITAL PARTNERS, LLC**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

---

**Consent of Independent Registered Public Accounting Firm**

We hereby consent to the incorporation by reference in the foregoing Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-284032) of our report dated March 26, 2024, relating to the consolidated financial statements of GT Biopharma, Inc. and Subsidiaries as of December 31, 2023 and 2022 which appear in GT Biopharma, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2023 filed with the Securities and Exchange Commission on March 26, 2024. We also consent to the reference to our firm under the caption "Experts" in such Registration Statement and related Prospectus.

/s/ Weinberg & Company, P.A.

Los Angeles, California  
January 27, 2025

---



## Calculation of Filing Fee Tables

Form S-1  
(Form Type)GT Biopharma, Inc.  
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

	Security Type	Security Class Title	Fee Calculation or Carry Forward Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price(1)	Fee Rate	Amount of Registration Fee
Fees to Be Paid	Equity	Common stock, par value \$0.0001 per share(2)	457(o)	—	—	\$ 8,000,000.00	0.0001531	\$ 1,224.80
Fees to Be Paid	Equity	Pre-funded warrants to purchase common stock, \$0.0001 par value per share(3)(5)(6)	457(g)	—	—	—	—	—
Fees to Be Paid	Equity	Common stock, \$0.0001 par value per share, underlying the pre-funded warrants(5)(6)	457(o)	—	—	—	—	—
Fees to Be Paid	Equity	Common warrants to purchase common stock(3)	457(g)	—	—	—	—	—
Fees to Be Paid	Equity	Common stock, par value \$0.0001 per share, underlying common warrants(4)	457(o)	—	—	\$ 8,000,000.00	0.0001531	\$ 1,224.80
Fees to Be Paid	Equity	Placement Agent Warrants to purchase common stock(3) stock (2)	457(g)	—	—	—	—	—
Fees to Be Paid	Equity	Common stock, par value \$0.0001 per share, underlying placement agent warrants(7)	457(o)	—	—	\$ 600,000.00	0.0001531	\$ 91.86
		Total Offering Amounts				\$ 16,600,000.00		\$ 2,541.46
		Total Fees Previously Paid						\$ 1,974.99
		Total Fee Offsets						—
		Net Fee Due						\$ 566.47

- (1) Estimated solely for the purpose of computing the registration fee in pursuant to Rule 457(o) under the Securities Act of 1933, as amended.
- (2) Pursuant to Rule 416(a) under the Securities Act, this registration statement shall also cover an indeterminate number of shares that may be issued and resold resulting from stock splits, stock dividends or similar transactions.
- (3) Pursuant to Rule 457(g) of the Securities Act, no separate registration fees are payable with respect to the common warrants, pre-funded warrants or placement agent warrants to purchase shares of common stock, \$0.0001 par value per share, offered hereby since the offering of shares of common stock underlying the warrants, pre-funded warrants and placement agent warrants are being registered hereby.
- (4) In addition to the common stock set forth in this table, pursuant to Rule 416 under the Securities Act, this registration statement also registers such indeterminate number of common stock as may become issuable upon exercise of the pre-funded warrants and common warrants.
- (5) The proposed maximum aggregate offering price of the common stock proposed to be sold in the offering will be reduced on a dollar-for-dollar basis based on the offering price of any pre-funded warrants offered and sold in the offering, and as such the proposed maximum offering price of the common stock and pre-funded warrants (including the common stock issuable upon exercise of the pre-funded warrants) if any, is \$8,000,000.
- (6) The registrant may issue pre-funded warrants to purchase common stock in the offering. The purchase price of each pre-funded warrant will equal the price per share at which shares of common stock are being sold to the public in this offering, minus \$0.0001, which constitutes the pre-funded portion of the exercise price, and the remaining unpaid exercise price of the pre-funded warrant will equal \$0.0001 per share (subject to adjustment as provided for therein).

- (7) The registrant has agreed to issue upon the closing of this offering, warrants (the "placement agent warrants") to the placement agent entitling it to purchase up to 6% of the number of securities sold in this offering. The exercise price of the placement agent warrants is equal to 125% of the public offering price of the securities offered hereby. As estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act, the proposed maximum aggregate offering price of the placement agent warrants is \$600,000, which is equal to 125% of \$480,000 (6% of \$8,000,000).
-