

**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

**LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State or other jurisdiction of  
incorporation or organization)

**100**

(Primary standard industrial  
classification code number)

**20-2903526**

(I.R.S. employer  
identification number)

**680 East Colorado Boulevard, Suite 180  
Pasadena, CA 91101  
(631) 830-7092**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Bastiaan van der Baan  
Chief Executive Officer  
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Pasadena, CA 91101  
(631) 830-7092**

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

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**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 ☐  
Non-accelerated filer ☒

Accelerated filer ☐  
Smaller reporting company ☒  
Emerging growth company ☐

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 shall file 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 or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.**

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

This offering will end no later than November 30, 2024, unless we decide to terminate the offering earlier (which we may do at any time at our discretion) prior to that date.

**The information in this prospectus is not complete and may be changed. The securities may not be sold until the registration statement filed with the SEC is declared effective. This 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 November 1, 2024**

## **PRELIMINARY PROSPECTUS**

### **LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

**Up to 1,895,734 Units, each consisting of**

**One Share of Common Stock or One Pre-Funded Warrant to purchase One Share of Common Stock and One and One-Quarter Common Warrants to purchase One Share of Common Stock**

**Up to 1,895,734 Shares of Common Stock Underlying the Pre-Funded Warrants**

**Up to 2,369,667 Shares of Common Stock Underlying the Common Warrants**

We are offering on a reasonable best efforts basis up to 1,895,734 units ("Units"), each consisting of one share of common stock, par value \$0.0001 per share ("common stock") or one pre-funded warrant to purchase one share of common stock ("Pre-Funded Warrant") and one and one-quarter (1.25) common stock purchase warrants to purchase one share of common stock (each, a "Common Warrant") at an assumed public offering price of \$2.11 per Unit, which was the closing price of our common stock on the Nasdaq Capital Market ("Nasdaq") on October 31, 2024, for gross proceeds of up to approximately \$4,000,000. Each Common Warrant offered hereby is immediately exercisable on the date of issuance at an exercise price per share of common stock equal to \$[\*] (110% of the offering price per Unit in this offering) and will expire five years from the date of issuance.

The public offering price per Unit will be determined between us and the placement agent based on market conditions at the time of pricing, and may be at a discount to the then current market price of our common stock. Therefore, the recent market price of our common stock referenced throughout this preliminary prospectus may not be indicative of the final offering price per Unit. The Units have no stand-alone rights and will not be certified or issued as stand-alone securities. The common stock or Pre-Funded Warrants (as defined below) and Common Warrants are immediately separable and will be issued separately in this offering.

Our common stock is listed on Nasdaq under the symbol "LIXT". The closing price of our common stock on Nasdaq on October 31, 2024 was \$2.11 per share.

We are also offering to investors in Units that would otherwise result in the investor's beneficial ownership exceeding 4.99% of our outstanding common stock immediately following the consummation of this offering the opportunity to invest in Units consisting of one Pre-Funded Warrant (in lieu of one share of common stock) and one Common Warrant. Subject to limited exceptions, a holder of Pre-Funded Warrants will not have the right to exercise any portion of its Pre-Funded Warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of the holder, such limit may be increased to up to 9.99%) of the common stock outstanding immediately after giving effect to such exercise. Each Pre-Funded Warrant will be exercisable for one share of common stock. The purchase price of each Unit including a Pre-Funded Warrant will be equal to the price per Unit including one share of common stock, minus \$0.001, and the exercise price of each Pre-Funded Warrant will equal \$0.001 per share. The Pre-Funded Warrants will be immediately exercisable (subject to the beneficial ownership cap) and may be exercised at any time until all of the Pre-Funded Warrants are exercised in full. For each Unit that includes a Pre-Funded Warrant purchased (without regard to any limitation on exercise set forth therein), the number of Units including a share of common stock we are offering will be decreased on a one-for-one basis. The Units have no stand-alone rights and will not be certificated or issued as stand-alone securities. The shares of common stock (or Pre-Funded Warrants) and the Common Warrants comprising the Units are immediately separable and will be issued separately in this offering.

The securities will be offered at a fixed price and are expected to be issued in a single closing. We expect this offering to be completed not later than one business day following the commencement of sales in this offering (after the effective date of the registration statement of which this prospectus forms a part) and we will deliver all securities to be issued in connection with this offering delivery versus payment or receipt versus payment, as the case may be, upon receipt of investor funds received by us. Accordingly, neither we nor the placement agent have made any arrangements to place investor funds in an escrow account or trust account since the placement agent will not receive investor funds in connection with the sale of the securities offered hereunder. This offering will end no later than November 30, 2024, unless we decide to terminate the offering earlier (which we may do at any time at our discretion) prior to that date.

We have engaged WallachBeth Capital LLC (the "placement agent" or "WallachBeth"), 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 of securities or dollar amount. 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 offering requirement as a condition of closing of this offering. We may sell fewer than all of the Units offered hereby, which may significantly reduce the amount of proceeds received by us. 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, including regaining compliance with Nasdaq's listing standards. See "Risk Factors" for more information regarding risks related to this offering. We will bear all costs associated with the offering. See "Plan of Distribution" for more information regarding these arrangements.

There is no established trading market for the Pre-Funded Warrants or the Common Warrants and we do not expect an active trading market to develop. We do not intend to list the Pre-Funded Warrants or the Common Warrants on any securities exchange or other trading market. Without an active trading market, the liquidity of these securities will be limited.

**Investing in our securities is speculative and involves a high degree of risk. You should carefully consider the risk factors beginning on page 18 of this prospectus before purchasing our securities.**

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

|                                     | Per Unit <sup>(1)</sup> | Total |
|-------------------------------------|-------------------------|-------|
| Public offering price               | \$                      | \$    |
| Placement agent fees <sup>(2)</sup> |                         |       |
| Proceeds to us, before expenses     | \$                      | \$    |

(1) Assumes all Units consist of one share of common stock and 1.25 Common Warrants.

(2) We have agreed to pay the placement agent a cash fee equal to 7.0% of the aggregate gross proceeds raised in this offering, and to reimburse the placement agent for certain of its offering-related expenses, including its legal fees, up to a maximum of \$75,000. See “Plan of Distribution” for a description of the compensation to be received by the placement agent.

Delivery of the securities hereby is expected to be made on or about November \_\_, 2024, subject to the satisfaction of customary closing conditions.

*Sole Placement Agent*

## WallachBeth Capital LLC

The date of this prospectus is November \_\_, 2024.

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### ABOUT THIS PROSPECTUS

You should rely only on the information contained in or incorporated by reference into this prospectus and in any free writing prospectus. We have not and the placement agent has not authorized anyone to provide you with information different from that contained in this prospectus. We are offering to sell, and seeking offers to buy, our securities only in jurisdictions where offers and sales are permitted. The information in this prospectus is accurate only as of the date of this prospectus, and any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of our securities.

Neither we nor the placement agent have 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 our securities and the distribution of this prospectus outside of the United States.

We own or have rights to trademarks or trade names that we use in connection with the operation of our business, including our corporate names, logos and website names. In addition, we own or have the rights to copyrights, trade secrets and other proprietary rights that protect the content of our products. This prospectus may also contain trademarks, service marks and trade names of other companies, which are the property of their respective owners. Our use or display of third parties’ trademarks, service marks, trade names or products in this prospectus is not intended to, and should not be read to, imply a relationship with or endorsement or sponsorship of us. Solely for convenience, some of the copyrights, trade names and trademarks referred to in this prospectus are listed without their ©, ® and ™ symbols, but we will assert, to the fullest extent under applicable law, our rights to our copyrights, trade names and trademarks. All other trademarks are the property of their respective owners.

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### PROSPECTUS SUMMARY

*The following summary highlights information contained or incorporated by reference elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before investing in our common stock, you should carefully read this entire prospectus, including our consolidated financial statements and the related notes and other documents incorporated by reference herein, as well as the information under the caption “Risk Factors” herein and under similar headings in the other documents that are incorporated by reference into this prospectus including documents that are filed after the date hereof. Some of the statements in this prospectus constitute forward-looking statements that involve risks and uncertainties. See “Cautionary Note Regarding Forward-Looking Statements”. Our actual results could differ materially from those anticipated in such forward-looking statements as a result of certain factors, including those discussed in the “Risk Factors” and other sections included in or incorporated by reference herein. In this prospectus, unless otherwise stated or the context otherwise requires, references to “Lixte”, the “Company”, “we”, “us”, “our”, or similar references mean Lixte Biotechnology Holdings, Inc.*

#### Company Overview

We are a clinical-stage biopharmaceutical company focused on identifying new targets for cancer drug development and developing and commercializing cancer

therapies. Our corporate office is located in Pasadena, California.

Our product pipeline is primarily focused on inhibitors of protein phosphatase 2A, which is used to enhance cytotoxic agents, radiation, immune checkpoint blockers and other cancer therapies. We believe that inhibitors of protein phosphatases have significant therapeutic potential for a broad range of cancers. We are focusing on the clinical development of a specific protein phosphatase inhibitor, referred to as LB-100, which has been shown to have clinical anti-cancer activity.

Our activities are subject to significant risks and uncertainties, including the need for additional capital. We have not yet commenced any revenue-generating operations, do not have positive cash flows from operations, rely on stock-based compensation for a substantial portion of employee and consultant compensation, and are dependent on periodic infusions of equity capital to fund our operating requirements.

We are focusing our development activities on our lead compound LB-100. We believe that the mechanism by which LB-100 affects cancer cell growth is different from cancer agents currently approved for clinical use. LB-100 is currently being tested in clinical trials in Ovarian Clear Cell Carcinoma, Metastatic Micro Satellite Stable (MSS) Colon Cancer and Advanced Soft Tissue Sarcoma. LB-100 has shown anti-cancer activity in animal models of glioblastoma multiforme, neuroblastoma, and medulloblastoma, all cancers of neural tissue. LB-100 has also been shown to enhance the effectiveness of commonly used anti-cancer drugs in animal models of melanoma, breast cancer and sarcoma. The enhancement of anti-cancer activity of these anti-cancer drugs occurs at doses of LB-100 that do not significantly increase toxicity in animals. It is therefore hoped that, when combined with standard anti-cancer regimens against many tumor types, LB-100 will improve therapeutic benefit.

As a compound moves through the FDA-approval process, it becomes an increasingly valuable property, but at a cost of additional investment at each stage. As the potential effectiveness of LB-100 has been documented at the clinical trial level, we have allocated resources to expand the breadth and depth of our patent portfolio. Our approach has been to operate with a minimum of overhead, moving compounds forward as efficiently and inexpensively as possible, and to raise funds to support each of these stages as certain milestones are reached. Our longer-term objective is to secure one or more strategic partnerships or licensing agreements with pharmaceutical companies with major programs in cancer.

## Description of Business

Most cancer patients are treated with either chemotherapy or immunotherapy or both. These therapies often have limited benefit and there is a high unmet medical need to enhance their effects. In many preclinical models we have shown that LB-100 enhances the effect of both chemotherapy and Immunotherapy

### CHEMOTHERAPY

+ LB-100

#### Enhanced chemotherapy efficacy

- Stimulates cell cycle
- Inhibits DNA repair



### IMMUNOTHERAPY

+ LB-100

#### Enhanced immunotherapy efficacy

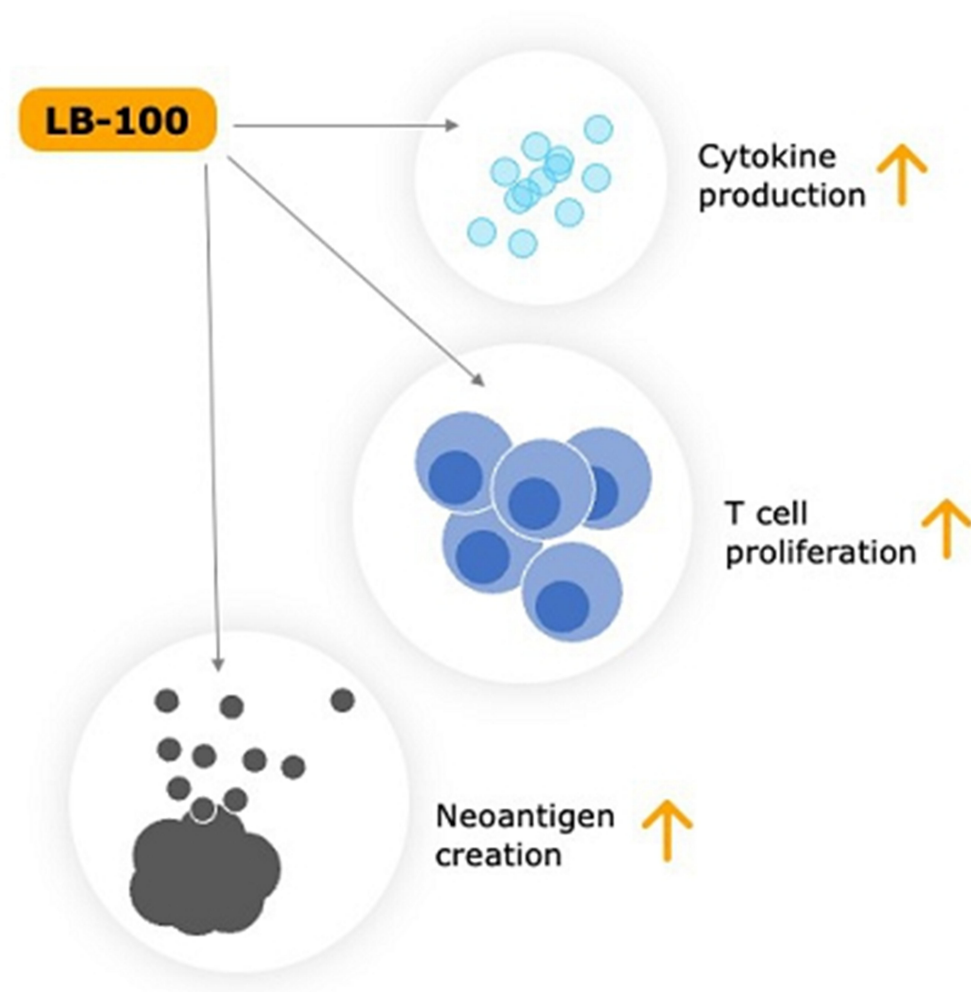
- Enhances T cell proliferation
- Increases release of cytokines
- Promotes production of neoantigens

LB-100, a small molecule potent inhibitor of PP2A, was designed and developed by us. Numerous preclinical studies have documented that LB-100 potentiates most if not all anti-cancer drugs that damage DNA. LB-100 is not associated with any increase in cytotoxicity when given with cytotoxic drugs. This synergy involves transient interruption of several DNA damage repair pathways by LB-100 and an increase in cell division rate. LB-100 has FDA Investigational New Drug status in the US and Investigational Medicinal Product Dossier approval in the European Union.

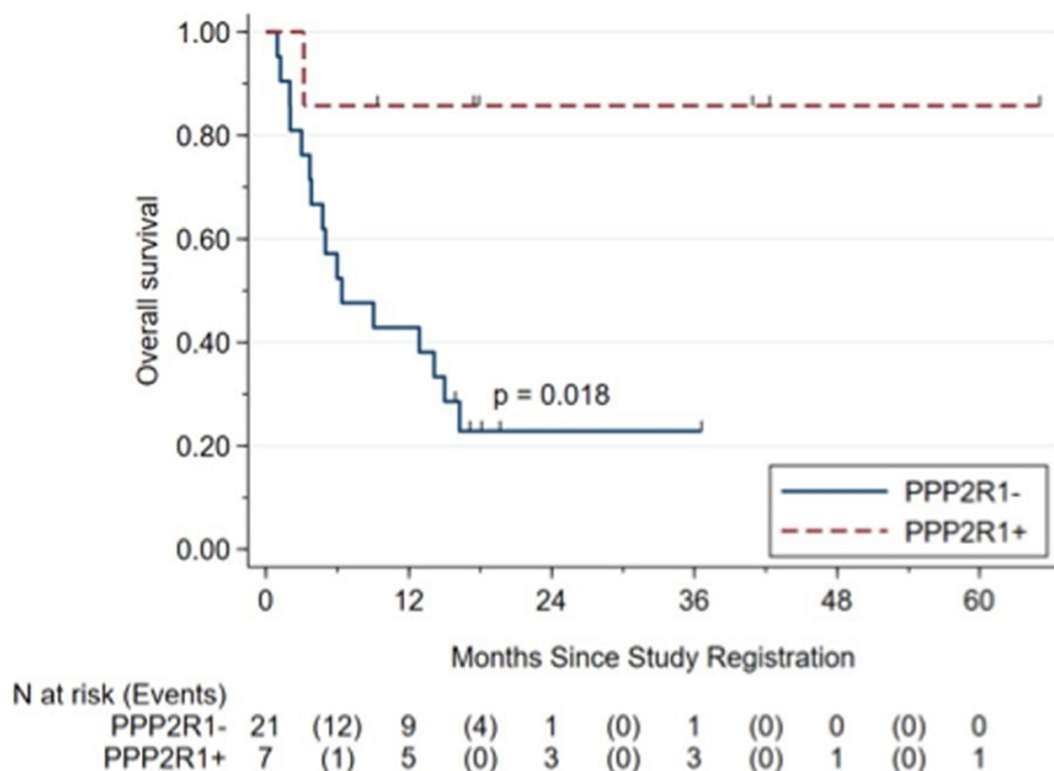
In its initial Phase 1 clinical trial, LB-100 given alone daily for 3 days was non-toxic, except for a transient increase in serum creatinine believed to be caused by inhibition of PP2A in the renal tubules. In the Phase 1 clinical trial, the Maximum Tolerated Dose (“MTD”) was 2.33mg/m<sup>2</sup> daily for 3 days every 3 weeks. Of the 25 patients with heavily-treated advanced solid tumors with measurable disease, 3 patients had stable disease for 2 cycles, 3 patients had stable disease for 4 cycles, and 3 patients had stable disease for 6 cycles. One patient with pancreatic cancer had a partial response after 12 cycles lasting 534 days.

Based on the DNA damage enhancing effect of PP2A inhibition with LB-100, we initiated a study in Advanced Soft Tissue Sarcoma (“ASTS”) with the Spanish Sarcoma Group (Grupo Español de Investigación en Sarcomas or “GEIS”) for a collaborative clinical trial in Madrid, Spain.

Low doses of LB-100 have now been shown to enhance immune checkpoint inhibition (“ICI”) by several different mechanisms affecting the tumor compartment and immune T-cell compartment. LB-100 increases CD8+T-cell infiltration and CD8-Treg ratio, CD8+T-cell proliferation, and cytokine production induces microsatellite instability, neoantigen production and immune responsiveness, converting immunologically “cold” to “hot” cancers.



Ovarian clear cell carcinoma patients with inactivating mutations in PPP2R1A, a gene coding for a scaffold component of PP2A, and treated with immune checkpoint inhibitors, were recently found to have markedly longer survival than patients without the mutation in their cancers. Retrospective reviews of patients with a variety of cancers treated with ICI or chemotherapy show much longer survival of ICI-treated patients with a PPP2R1A mutation in their tumors.



Based on the observations in ovarian clear cell carcinoma, we have initiated a clinical trial in this disease combining LB-100 with a monoclonal antibody blocking PD-1, a protein found on T-cells (NCT06065462).

Given these preclinical and clinical observations, it is likely that LB-100 may be a general way to enhance immunotherapy responses.

|  |                                     | Pre-Clinical | Phase 1b | Phase 2 | Phase 3 | Status  |
|--|-------------------------------------|--------------|----------|---------|---------|---|
| <b>LB-100 + Immunotherapy</b>                | Ovarian Clear Cell Cancer           | NCT06065462  |          |         |         | Actively Recruiting<br>6 patients completed safety intro, second site opening. GSK sponsored. |
| <b>LB-100 + Immunotherapy</b>                | Metastatic MSI Low Colon Cancer     | NCT06012734  |          |         |         | Actively Recruiting<br>Roche sponsored, first patient entered August 2024.                    |
| <b>LB-100 + Chemotherapy</b>                 | Advanced Soft Tissue Sarcoma (ASTS) | NCT05809830  |          |         |         | Completing first phase, evaluating data.  |
| <b>LB-100 + Chemotherapy + Immunotherapy</b> | Small Cell Lung Cancer (SCLC)       | NCT04560972  |          |         |         | Closed<br>Potential re start outside US   |

The research on the LB-100 series was initiated in 2006 under a Cooperative Research and Development Agreement (“CRADA”) with the National Institute of Neurologic Disorders and Stroke or NINDS of the National Institutes of Health or NIH dated March 22, 2006 that was subsequently extended through a series of amendments until it terminated on April 1, 2013.

We have also designed and developed the LB-200 series, which consists of histone deacetylase inhibitors (HDACi). LB-200 has not advanced to the clinical stage and would require additional capital to fund further development. Accordingly, because of our focus on the clinical development of LB-100 and analogs for cancer therapy as described below in more detail, we have decided not to actively pursue the preclinical development of our LB-200 series of compounds at this time.

## Clinical Trial Agreements

### Spanish Sarcoma Group Collaboration Agreement

Effective July 31, 2019, we entered into a Collaboration Agreement for an Investigator-Initiated Clinical Trial with the Spanish Sarcoma Group (Grupo Español de Investigación en Sarcomas or “GEIS”), Madrid, Spain, to carry out a study entitled “Randomized phase I/II trial of LB-100 plus doxorubicin vs. doxorubicin alone in first line of advanced soft tissue sarcoma”. The purpose of this clinical trial is to obtain information with respect to the efficacy and safety of LB-100 combined with doxorubicin in soft tissue sarcomas. Doxorubicin is the global standard for initial treatment of advanced soft tissue sarcomas (“ASTS”). Doxorubicin alone has been the mainstay of first line treatment of ASTS for over 40 years, with little improvement in survival from adding cytotoxic compounds to or substituting other cytotoxic compounds for doxorubicin. In animal models, LB-100 consistently enhances the anti-tumor activity of doxorubicin without apparent increases in toxicity.

GEIS has a network of referral centers in Spain and across Europe that have an impressive track record of efficiently conducting innovative studies in ASTS. We agreed to provide GEIS with a supply of LB-100 to be utilized in the conduct of this clinical trial, as well as to provide funding for the clinical trial. The goal is to enter approximately 150 to 170 patients in this clinical trial over a period of two to four years. The Phase 1 portion of the study began in the quarter ended June 30, 2023 to determine the recommended Phase 2 dose of the combination of doxorubicin and LB-100. As advanced sarcoma is a very aggressive disease, the design of the Phase 2 portion of the study assumes a median progression-free survival (“PFS”), no evidence of disease progression or death from any cause) of 4.5 months in the doxorubicin arm and an alternative median PFS of 7.5 months in the doxorubicin plus LB-100 arm to demonstrate a statistically significant decrease in relative risk of progression or death by adding LB-100. There is a planned interim analysis of the primary endpoint when approximately 50% of the 102 events required for final analysis is reached.

On October 13, 2022, we announced that the Spanish Agency for Medicines and Health Products (Agencia Española de Medicamentos y Productos Sanitarios or

“AEMPS”) had authorized a Phase 1b/randomized Phase 2 study of LB-100, our lead clinical compound, plus doxorubicin, versus doxorubicin alone, the global standard for initial treatment of advanced soft tissue sarcomas (ASTS). Consequently, this clinical trial commenced during the quarter ended June 30, 2023 and to be completed and a report prepared by December 31, 2026. In April 2023, GEIS completed its first site initiation visit in preparation for the clinical trial at Fundación Jiménez Díaz University Hospital (Madrid). Up to 170 patients will be entered into the clinical trial. The recruitment phase of the Phase 1b portion of the protocol was completed during the quarter ended June 30, 2024. We expect to have data on toxicity and preliminary efficacy from this portion of the clinical trial in the quarter ending December 31, 2024, and subject to clinical results and the availability of capital resources, anticipate that we will be in a position to decide whether to proceed to a related Phase 2 portion of the study at that time.

The interim analysis of this clinical trial will be done before full accrual of patients is completed to determine whether the study has the possibility of showing superiority of the combination of LB-100 plus doxorubicin compared to doxorubicin alone. A positive study would have the potential to change the standard therapy for this disease after four decades of failure to improve the marginal benefit of doxorubicin alone.

#### Clinical Research Support Agreement Relating to Small Cell Lung Cancer

We have executed a Clinical Research Support Agreement with the City of Hope National Medical Center to carry out a Phase 1b clinical trial of LB-100 combined with an FDA-approved standard regimen for treatment of untreated extensive-stage disease small cell lung cancer. The clinical trial was initiated on March 9, 2021. However, due to the lack of patient accrual, the Company provided notice to the City of Hope National Medical Center of the Company’s intent to terminate the Clinical Research Support Agreement effective as of July 8, 2024. We plan to review possible other sites for the clinical trial.

#### MD Anderson Cancer Center Clinical Trial

On September 20, 2023, we announced an investigator-initiated Phase 1b/2 collaborative clinical trial to assess whether adding LB-100 to a human programmed death receptor-1 (“PD-1”) blocking antibody of GSK plc (“GSK”), dostarlimab-gxly, may enhance the effectiveness of immunotherapy in the treatment of ovarian clear cell carcinoma (“OCCC”). The clinical trial is being sponsored by The University of Texas MD Anderson Cancer Center (“MD Anderson”) and is being conducted at The University of Texas - MD Anderson Cancer Center. We are providing LB-100 and GSK is providing dostarlimab-gxly and financial support for the clinical trial. On January 29, 2024, we announced the entry of the first patient into this clinical trial. We currently expect that this clinical trial will be completed by December 31, 2027.

#### Netherlands Cancer Institute Clinical Trial

Effective June 10, 2024, we entered into a Clinical Trial Agreement with the Netherlands Cancer Institute (“NKI”) to conduct a Phase 1b clinical trial of the Company’s protein phosphatase inhibitor, LB-100, combined with atezolizumab, a PD-L1 inhibitor, the proprietary molecule of F. Hoffman-La Roche Ltd. (“Roche”), for patients with microsatellite stable metastatic colon cancer. Under the agreement, we will provide our lead compound, LB-100, and under a separate agreement between NKI and Roche, Roche will provide atezolizumab and financial support for the clinical trial. We have no obligation to and will not provide any reimbursement of clinical trial costs. Pursuant to the agreement and the protocol set forth in the agreement, the clinical trial will be conducted by NKI at NKI’s site in Amsterdam by principal investigator Neeltje Steeghs, MD, PhD, and NKI will be responsible for the recruitment of patients. The agreement provides for the protection of the respective intellectual property rights of each of Lixte, NKI and Roche.

This Phase 1b clinical trial will evaluate safety, optimal dose and preliminary efficacy of LB-100 combined with atezolizumab for the treatment of patients with metastatic microsatellite stable colorectal cancer. Immunotherapy using monoclonal antibodies like atezolizumab can enhance the body’s immune response against cancer and hinder tumor growth and spread. LB-100 has been found to improve the effectiveness of anticancer drugs in killing cancer cells by inhibiting a protein called PP2A on cell surfaces. Blocking PP2A increases stress signals in tumor cells expressing the PP2A protein. Accordingly, combining atezolizumab with LB-100 may enhance treatment efficacy for metastatic colorectal cancer, as cancer cells with heightened stress signals are more vulnerable to immunotherapy.

This study comprises a dose escalation phase and a dose expansion phase. The objective of the dose escalation phase is to determine the recommended Phase 2 dose (RP2D) of LB-100 when combined with the standard dosage of atezolizumab. The dose expansion phase will further investigate the preliminary efficacy, safety, tolerability, and pharmacokinetics/dynamics of the LB-100 and atezolizumab combination. The clinical trial opened in August 2024 with the enrollment of the first patient. Patient accrual is expected to take up to 24 months, with a maximum of 37 patients with advanced colorectal cancer to be enrolled in this study.

The principal investigator of the colorectal study testing LB-100 in combination with atezolizumab is currently investigating two Serious Adverse Events (“SAEs”) observed in the clinical trial. Evaluation is underway to determine next steps. For additional information about SAEs, see the risk factor entitled “*A clinical trial hold due to serious adverse events could delay or halt the development of our product candidate*” at “Risk Factors” elsewhere in this document.

#### National Cancer Institute Pharmacologic Clinical Trial

In May 2019, the National Cancer Institute (NCI) initiated a glioblastoma (GBM) pharmacologic clinical trial. This study was being conducted and funded by the NCI under a Cooperative Research and Development Agreement, with the Company being required to provide the LB-100 clinical compound.

Primary malignant brain tumors (gliomas) are very challenging to treat. Radiation combined with the chemotherapeutic drug temozolomide has been the mainstay of therapy of the most aggressive gliomas (glioblastoma multiforme or GBM) for decades, with little further benefit gained by the addition of one or more anti-cancer drugs, but without major advances in overall survival for the majority of patients. In animal models of GBM, the Company’s novel protein phosphatase inhibitor, LB-100, has been found to enhance the effectiveness of radiation, temozolomide chemotherapy treatments and immunotherapy, raising the possibility that LB-100 may improve outcomes of standard GBM treatment in the clinic. Although LB-100 has proven safe in patients at doses associated with apparent anti-tumor activity against several human cancers arising outside the brain, the ability of LB-100 to penetrate tumor tissue arising in the brain was not known. Many drugs potentially useful for GBM treatment do not enter the brain in amounts necessary for anti-cancer action.

The NCI study was designed to determine the extent to which LB-100 enters recurrent malignant gliomas. Patients having surgery to remove one or more tumors received one dose of LB-100 prior to surgery and had blood and tumor tissue analyzed to determine the amount of LB-100 present and to determine whether the cells in the tumors showed the biochemical changes expected to be present if LB-100 reached its molecular target. As a result of the innovative design of the NCI study, it was believed that data from a few patients would be sufficient to provide a sound rationale for conducting a larger clinical trial to determine the effectiveness of adding LB-100 to the standard treatment regimen for GBMs. Blood and brain tumor tissue were analyzed from seven patients after intravenous infusion of a single dose of LB-100. Results of the investigation demonstrated that there was virtually no entry of LB-100 into the brain tumor tissue. Accordingly, alternative methods of drug delivery will be required to determine if LB-100 has meaningful clinical anti-cancer activity against glioblastoma multiforme and other aggressive brain tumors.

#### Patent and License Agreements

##### National Institute of Health

Effective February 23, 2024, we entered into a Patent License Agreement (the “License Agreement”) with the National Institute of Neurological Disorders and Stroke



(“NINDS”) and the National Cancer Institute (“NCI”), each an institute or center of the National Institute of Health (“NIH”). Pursuant to the License Agreement, we have licensed exclusively NIH’s intellectual property rights claimed for a Cooperative Research and Development Agreement (“CRADA”) subject invention co-developed with the Company, and the licensed field of use, which focuses on promoting anti-cancer activity alone, or in combination with standard anti-cancer drugs. The scope of this clinical research extends to checkpoint inhibitors, immunotherapy, and radiation for the treatment of cancer. The License Agreement is effective, and shall extend, on a licensed product, licensed process, and country basis, until the expiration of the last-to-expire valid claim of the jointly owned licensed patent rights in each such country in the licensed territory, unless sooner terminated.

The License Agreement contemplates that we will seek to work with pharmaceutical companies and clinical trial sites (including comprehensive cancer centers) to initiate clinical trials within timeframes that will meet certain benchmarks. Data from the clinical trials will be the subject of various regulatory filings for marketing approval in applicable countries in the licensed territories. Subject to the receipt of marketing approval, we would be expected to commercialize the licensed products in markets where regulatory approval has been obtained.

### ***Intellectual Property***

Our intellectual property includes proprietary know-how, proprietary methodologies and extensive clinical validation data and publications. To provide legal protection of our intellectual property, we rely on a combination of patents, licenses, trade secrets, trademarks, confidentiality and non-disclosure clauses and agreements, and other forms of intellectual property protection to define and protect our rights to our products.

Our products are expected to be covered by our patents. These patents now cover sole rights to the composition and synthesis of our LB-100 series of drugs, which is our lead clinical compound in development. We have filed patent applications covering the treatment of cancer with LB-100. We have also filed joint patent applications with the NIH and the Netherlands Cancer Institute for the treatment of cancer using LB-100 in combination with other drugs such as an immune checkpoint inhibitor and a WEE1 inhibitor.

Patent applications for the LB-100 series (oxabicycloheptanes and oxabicycloheptenes) have been filed in the United States and internationally under the Patent Cooperation Treaty. Patents for composition of matter and for several uses of the LB-100 series have been issued in the United States, Mexico, Australia, Japan, China, Hong Kong, Canada, and by the European Patent Office

We strive to protect and enhance the proprietary technology, inventions, and improvements that are commercially important to the development of our business, including seeking, maintaining, and defending our patent rights, which are owned solely by our wholly-owned Delaware subsidiary, Lixte Biotechnology, Inc., except in several instances jointly with one of our many collaborators. We also rely on trade secrets relating to our proprietary pipeline of product candidates and on know-how and continuing technological innovation to develop and strengthen our pipeline. We intend to rely on regulatory protection afforded by regulatory agencies through data exclusivity, market exclusivity, and patent term extensions, where available.

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Our success will depend in large part on our ability to obtain and maintain patent and other proprietary protection for commercially important technology, inventions and know-how related to its business; defend and enforce our patents; preserve the confidentiality of our trade secrets; and operate without infringing valid and enforceable patents or proprietary rights of third parties. Our ability to stop third parties from making, using, selling, offering to sell, or importing our technology may depend on the extent to which we have rights under valid and enforceable licenses, patents, or trade secrets that cover these activities. In some cases, enforcement of these rights may depend on cooperation of the joint owners of our jointly owned patents and patent applications.

With respect to both our solely and jointly owned intellectual property, we cannot be sure that patents will be granted on any of our pending patent applications or on any patent applications filed solely or jointly by us in the future; we cannot be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our intended commercial products or therapeutic methods; and we cannot be sure that an agency or court would determine that our solely or jointly owned patents are valid and enforceable.

### ***Going Concern***

We have a history of operating losses since inception. Because we are currently engaged in various early-stage clinical trials, it is expected that it will take a significant amount of time and resources to develop any product or intellectual property capable of generating sustainable revenues. Accordingly, our business is unlikely to generate any sustainable operating revenues in the next several years and may never do so. Even if we are able to generate revenues through licensing our technology, product sales or other commercial activities, there can be no assurance that we will be able to achieve and maintain positive earnings and operating cash flows. As discussed further in “Management’s Discussion and Analysis - Liquidity and Capital Resources”, included in the our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, which is incorporated herein by reference, our auditor has included a “going concern” explanatory paragraph in its report on our consolidated financial statements for the fiscal year ended December 31, 2023, expressing substantial doubt about our ability to continue as a going concern for the next twelve months. Our consolidated financial statements do not include any adjustments that may result from the outcome of this uncertainty. If we cannot secure the financing needed to continue as a viable business, our shareholders may lose some or all of their investment in us.

### ***Nasdaq Compliance***

On August 19, 2024, we received a deficiency letter from the Listing Qualifications Department of Nasdaq indicating that we are not in compliance with Nasdaq Listing Rule 5550(b)(1) (the “Stockholders’ Equity Rule”), which requires us to maintain a minimum stockholders’ equity of \$2,500,000. This notice of non-compliance has no immediate impact on the continued listing or trading of our securities on Nasdaq, which will continue to be listed and traded on Nasdaq, subject to our compliance with the other Nasdaq continued listing requirements.

On October 3, 2024, we submitted a letter to Nasdaq with our plan to regain compliance with the Stockholders’ Equity Rule, which outlined our proposed initiatives to regain compliance by raising equity capital through various registered equity offerings.

On October 21, 2024, Nasdaq provided us notice that it had granted an extension through February 18, 2025 to regain compliance with the Stockholders’ Equity Rule. We must complete our capital raising initiatives and evidence compliance with the Stockholders’ Equity Rule through filing a Current Report on Form 8-K with the Securities and Exchange Commission (the “SEC”) providing certain required information by February 18, 2025.

If we fail to evidence compliance with the Stockholders’ Equity Rule upon filing our periodic report for the quarter ending March 31, 2025 with the SEC, we may be subject to delisting. If Nasdaq determines to delist our common stock, we will have the right to appeal to a Nasdaq hearings panel. The hearing request would stay any suspension or delisting action pending the conclusion of the hearing process.

We intend to take reasonable measures available to regain compliance under Nasdaq’s listing rules and to remain listed on Nasdaq. However, there can be no assurances that we will ultimately regain compliance with the Stockholders’ Equity Rule, or be able to maintain compliance with all other applicable requirements for continued listing on Nasdaq. If we do not regain compliance with Nasdaq’s listing rules within the time period permitted by Nasdaq, then our securities will be delisted from Nasdaq.

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## Corporate Information

We were incorporated as a Delaware Corporation on May 24, 2005 under the name SRKP7, Inc. On June 30, 2006, pursuant to a share exchange agreement, we acquired all of the outstanding shares of Lixte Biotechnology, Inc. which then became a wholly owned subsidiary. On December 7, 2006, we changed our name to Lixte Biotechnology Holdings, Inc. Effective September 26, 2023, Bastiaan van der Baan, a director of the Company since June 17, 2022, replaced our founder, John S. Kovach, as President and Chief Executive Officer. Dr. Kovach passed away on October 5, 2023. Effective October 6, 2023, Mr. van der Baan was appointed as Chairman of our Board of Directors. Our common stock and Common Warrants are traded on Nasdaq under the symbols “LIXT” and “LIXTW”, respectively. On June 2, 2023, we effected a one-for-ten reverse split of our outstanding shares of common stock in order to remain in compliance with the \$1.00 minimum closing bid price requirement of Nasdaq.

Our principal address is 680 East Colorado Boulevard, Suite 180, Pasadena, CA 91101. Our telephone number is (631) 830-7092. We maintain a website at <https://lixte.com>. The information contained on our website is not, and should not be interpreted to be, incorporated into this prospectus.

## THE OFFERING

|                                  |   |
|----------------------------------|---|
| <i>Issuer:</i>                   | Lixte Biotechnology Holdings, Inc.  |
| <i>Securities offered by us:</i> | <p>Up to 1,895,734 Units, each Unit consisting of one share of our common stock, and one and one-quarter (1.25) Common Warrants to purchase one share of our common stock. Each Common Warrant will have an assumed exercise price of \$[*] per share (110% of the public offering price of one Unit), is exercisable immediately and will expire on the fifth anniversary of the original issuance date.</p> <p>We are also offering to investors in Units that would otherwise result in the investor’s beneficial ownership exceeding 4.99% of our outstanding common stock immediately following the consummation of this offering the opportunity to invest in Units consisting of one Pre-Funded Warrant to purchase one share of common stock in lieu of one share of common stock and one Common Warrant. For each Unit including a Pre-Funded Warrant purchased (without regard to any limitation on exercise set forth therein), the number of Units including a share of common stock we are offering will be decreased on a one-for-one basis. Subject to limited exceptions, a holder of Pre-Funded Warrants will not have the right to exercise any portion of its Pre-Funded Warrant if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of the holder, such limit may be increased to up to 9.99%) of the common stock outstanding immediately after giving effect to such exercise. Each Pre-Funded Warrant will be exercisable for one share of common stock. The purchase price of each Unit including a Pre-Funded Warrant will be equal to the price per Unit including one share of common stock, minus \$0.001, and the exercise price of each Pre-Funded Warrant will equal \$0.001 per share. The Pre-Funded Warrants will be immediately exercisable (subject to the beneficial ownership cap) and may be exercised at any time in perpetuity until all of the Pre-Funded Warrants are exercised in full. This offering also relates to the shares of common stock issuable upon the exercise of the Pre-Funded Warrants.</p> <p>The Units will not be certificated or issued in stand-alone form. The shares of our common stock (or Pre-Funded Warrants) and the Common Warrants comprising the Units are immediately separable upon issuance and will be issued separately in this offering.</p> |

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| <i>Number of shares of common stock being offered by us:</i>           | Up to 1,895,734 shares of common stock (assuming the sale of the maximum number of Units covered by this prospectus, no issuance of Pre-Funded Warrants, and no exercise of the Common Warrants issued in this offering).   |
| <i>Number of Common Warrants being offered by us:</i>                  | Common Warrants to purchase up to 2,369,667 shares of common stock.   |
| <i>Assumed public offering price:</i>                                  | \$2.11 per Unit, which is the closing price of our common stock on Nasdaq on October 31, 2024.  |
| <i>Common stock outstanding immediately prior to this offering:</i>    | 2,249,290 shares of common stock.   |
| <i>Common stock to be outstanding immediately after this offering:</i> | Up to 4,145,024 shares <sup>(1)</sup> (assuming the sale of the maximum number of Units covered by this prospectus, no issuance of Pre-Funded Warrants, and no exercise of the Common Warrants issued in this offering).  |
| <i>Use of proceeds:</i>  | Assuming the maximum number of Units are sold in this offering at an assumed public offering price of \$2.11 per Unit, which represents the closing price of our common stock on Nasdaq on October 31, 2024, and assuming no issuance of Pre-Funded Warrants in connection with this offering, we estimate that the net proceeds from our sale of Units in this offering will be approximately \$3,495,000, after deducting the placement agent fees and estimated offering expenses payable by us. However, because this is a reasonable best efforts offering with no minimum number of securities or amount of proceeds as a condition to closing, we may not sell all or any of these securities offered pursuant to this prospectus and we may receive significantly less in net proceeds. We currently intend to use the net proceeds from this offering for working capital and general corporate purposes. See “Use of Proceeds”.   |
| <i>Description of Common Warrants:</i>                                 | <p>Each Common Warrant will have an exercise price per share of 110% of the public offering price per Unit, will be exercisable immediately and will expire on the fifth anniversary of the original issuance date. Each Common Warrant is exercisable for one share of common stock, subject to adjustment in the event of stock dividends, stock splits, stock combinations, reclassifications, reorganizations or similar events affecting our common stock as described herein.</p> <p>Each holder of Common Warrants will be prohibited from exercising its Common Warrant for shares of our common stock if, as a result of such exercise, the holder, together with its affiliates, would own more than 4.99% of the total number of shares of our common stock then issued and outstanding. However, any holder may increase such percentage to any other percentage not in excess of 9.99%. The Common Warrants will be issued in certificated form.</p> <p>This offering also relates to the offering of the shares of common stock issuable upon the exercise of the Common Warrants. For more information regarding the Common Warrants, you should carefully read the section titled “Description of Securities We Are Offering — Common Warrants” in this prospectus.</p> |

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*Placement Agent Common Warrants:*

Upon the closing of this offering, we will issue to WallachBeth or its designee, as the placement agent in this offering, Common Warrants (the “Placement Agent Common Warrants”) entitling it to purchase a number of shares of common stock equal to 3.0% of the Units sold in this offering at an exercise price equal to no less than 110% of the public offering price in the offering (the “Placement Agent Common Warrants”). The Placement Agent Common Warrants shall be exercisable at any time after issuance and will expire five years after the effective date of the registration statement. However, neither the Placement Agent Common Warrants nor the common stock underlying them will be transferable until 180 days after the effective date of the registration statement of which this prospectus forms a part. This offering also relates to the offering of the shares of common stock issuable upon the exercise of the Placement Agent Common Warrants.

*Placement agent compensation:*

Upon the closing of this offering, we will pay WallachBeth a cash transaction fee equal to 7.0% of the aggregate gross cash proceeds to us from the sale of the securities in the offering. In addition, we will reimburse WallachBeth for certain out-of-pocket expenses, including legal fees, related to the offering up to a maximum of \$75,000. See “Plan of Distribution”.

*Reasonable best efforts offering:*

We have agreed to offer and sell the securities offered hereby directly to the purchasers. We have retained WallachBeth to act as our exclusive placement agent to use its reasonable best efforts to solicit offers to purchase the securities offered by this prospectus. The placement agent is not required to buy or sell any specific number or dollar amount of the securities offered hereby. See “Plan of Distribution” beginning on page 35 of this prospectus.

*Nasdaq trading symbol:*

Our common stock currently trades on Nasdaq under the symbol “LIXT”. We do not intend to list the Pre-Funded Warrants or Common Warrants offered hereunder on any stock exchange.

*Transfer agent, Common Warrant agent and registrar:*

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

*Risk factors:*

The securities offered by this prospectus are speculative and involve a high degree of risk. Investors purchasing securities should not purchase the securities unless they can afford the loss of their entire investment. See “Risk Factors” beginning on page 18.

(1) The number of shares of our common stock to be outstanding following this offering is based on 2,249,290 shares of common stock outstanding as of October 31, 2024 and excludes:

- 72,917 shares of our common stock issuable upon the conversion of 350,000 shares of Series A Convertible Preferred Stock outstanding at a conversion rate of 0.2083 common shares per preferred share, reflecting a conversion price of \$48.00 per common share;
- 605,348 shares of common stock issuable upon the exercise of common stock options issued to members of management, consultants, and directors at a weighted average exercise price of \$13.8396 per share;
- 808,365 shares of our common stock issuable upon the exercise of outstanding common stock Warrants at a weighted average exercise price of \$16.4074 per share;
- 198,402 shares of common stock reserved for future grants pursuant to our 2020 Stock Incentive Plan, as amended (the “2020 Plan”);
- 2,369,667 shares of our common stock issuable upon the exercise of the Common Warrants; and
- 56,872 shares of our common stock issuable upon the exercise of the Placement Agent Common Warrants to be issued in this offering.

Unless otherwise indicated, this prospectus also assumes that no Pre-Funded Warrants are issued.

## RISK FACTORS

*Investing in our common stock and Common Warrants is highly speculative and involves a significant degree of risk. You should carefully consider the following risks and uncertainties as well as the risks and uncertainties described in the section entitled “Risk Factors” contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, as well as in our subsequent Quarterly Reports filed with the Securities and Exchange Commission (the “SEC”), which filings are incorporated in this prospectus by reference in their entirety, as well as in any prospectus supplement hereto. These risk factors could materially and adversely affect our business, results of operations or financial condition. Our business faces significant risks and the risks described below or incorporated by reference herein may not be the only risks we face. Additional risks not presently known to us or that we currently believe are immaterial may materially affect our business, results of operations, or financial condition. If any of these risks occur, the trading price of our common stock could decline and you may lose all or part of your investment.*

### Risks Related to the Development and Regulatory Approval of Our Product Candidates

#### *A clinical trial hold due to serious adverse events could delay or halt the development of our product candidate.*

The Company’s lead drug candidate, LB-100, is currently undergoing various clinical trials, and there is a risk that one or more of these trials could be placed on hold by regulatory authorities due to serious adverse events (SAEs) related to our drug candidate or to another company’s drug used in combination in one of our clinical trials. It is possible that the SAEs could be attributable to our drug candidate and could include, but not be limited to, unexpected severe side effects, treatment-related deaths, or long-term health complications. A dose given could result in non-tolerable adverse events defined as dose-limiting toxicity (DLT). When two DLTs occur at the same dose-level that dose-level is considered too high and unsafe. Further treatment is only allowed at lower dose-levels that have previously been found safe.

If an SAE or a pattern of SAEs is observed during the course of a clinical trial involving our drug candidate, the U.S. Food and Drug Administration (FDA), European Medicines Agency (EMA), or other regulatory authorities may issue a clinical hold, requiring us to pause or discontinue further enrollment and dosing in our clinical trial. It is also possible that the clinical trial could be terminated. Any of these actions could delay or halt the development of our drug candidate, increase development costs, and negatively impact our ability to ultimately achieve regulatory approval. Additionally, if an SAE is confirmed to be drug-related, we may be required to conduct additional studies, modify the study design, or abandon further development of the drug candidate altogether, which could materially impact our business, financial condition, and prospects.

The occurrence of an SAE and any resulting clinical hold could also harm our reputation with patients, physicians, health institutions, and investors, diminish our ability to attract clinical trial participants, and damage our ability to interest investors and obtain financing in the future. There can be no assurance that we will not experience such SAEs in the future or that any related clinical hold will be lifted in a timely manner, or at all.

The principal investigator of the colorectal study testing LB-100 in combination with atezolizumab (Roche PD-L1 inhibitor) is currently investigating two SAEs

observed in the clinical trial that was launched in August 2024. Evaluation is underway to determine next steps.

## **Risks Related to this Offering and Ownership of our Securities**

*This is a reasonable best efforts offering, with no minimum amount of securities required to be sold, and we may sell fewer than all of the securities offered hereby.*

The placement agent has agreed to use its reasonable best efforts to solicit offers to purchase the Units 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 complete this offering. As 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 in this prospectus. We may sell fewer than all of the securities offered hereby, which would 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 all of the Units offered in this offering. The success of this offering will impact our ability to use the proceeds to execute our business plans. We may have insufficient capital to implement our business plans, potentially resulting in greater operating losses or dilution unless we are able to raise capital from alternative sources.

*Investors in this offering will experience immediate and substantial dilution in the book value of their investment.*

The public offering price will be substantially higher than the net tangible book value per share of our outstanding shares of common stock. As a result, investors in this offering will incur immediate dilution of \$0.72 per share based on the assumed public offering price of \$2.11 per Unit. Investors in this offering will pay a price per Unit that substantially exceeds the book value of our assets after subtracting our liabilities. See “Dilution” for a more complete description of how the value of your investment will be diluted upon the completion of this offering.

*Our management will have broad discretion over the use of the proceeds we receive in this offering and might not apply the proceeds in ways that increase the value of your investment.*

Our management will have broad discretion over the use of our net proceeds from this offering, and you will be relying on the judgment of our management regarding the application of these proceeds. Our management might not apply our net proceeds in ways that ultimately increase the value of your investment. We expect to use the net proceeds from this offering for working capital and general corporate purposes.

*We have a history of losses, expect to continue to incur losses in the near term and may not achieve or sustain profitability in the future, and as a result, our management has identified, and our auditors agreed that there is a substantial doubt about our ability to continue as a going concern.*

We have incurred significant losses since our inception. We experienced net losses of \$5,087,029 and \$6,312,535 for the years ended December 31, 2023 and 2022, respectively, and \$1,982,241 for the six months ended June 30, 2024. We expect our operating losses will continue, or even increase, at least through the near term. You should not rely upon our past results as indicative of future performance. We will not reach profitability in the near future or at any specific time in the future.

The report of our independent registered public accounting firm that accompanies our audited consolidated financial statements in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023 contains an explanatory paragraph regarding substantial doubt about our ability to continue as a going concern. Our consolidated financial statements do not include any adjustments that might result if we are unable to continue as a going concern. If we are unable to continue as a going concern, holders of our securities might lose their entire investment.

*We are currently not in compliance with the Nasdaq continued listing requirements. If we are unable to regain compliance with Nasdaq’s listing requirements, our securities could be delisted, which could affect our common stock’s market price and liquidity and reduce our ability to raise capital.*

On August 19, 2024, we received a letter from the Listing Qualifications Department of Nasdaq indicating that we do not comply with the minimum stockholders’ equity requirement for continued listing on Nasdaq under the Stockholders’ Equity Rule because our stockholders’ equity was less than the required minimum of \$2,500,000. As of June 30, 2024, our stockholders’ equity was \$2,246,139 and we have not regained compliance with the Stockholders’ Equity Rule subsequent to that date.

On October 3, 2024, we submitted a letter to Nasdaq with our plan to regain compliance with the Stockholders’ Equity Rule, which outlined our proposed initiatives to regain compliance by raising equity capital through various registered equity offerings, including the estimated proceeds from this offering of \$3,495,000.

On October 21, 2024, Nasdaq provided us notice that it had granted an extension through February 18, 2025 to regain compliance with the Stockholders’ Equity Rule. We must complete our capital raising initiatives and evidence compliance with the Stockholders’ Equity Rule through filing a Current Report on Form 8-K with the SEC providing certain required information by February 18, 2025.

If we fail to evidence compliance with the Stockholders’ Equity Rule upon filing our periodic report for the quarter ending March 31, 2025 with the SEC, we may be subject to delisting. If Nasdaq determines to delist our common stock, we will have the right to appeal to a Nasdaq hearings panel. The hearing request would stay any suspension or delisting action pending the conclusion of the hearing process.

We intend to take reasonable measures available to regain compliance under Nasdaq’s listing rules and to remain listed on Nasdaq. However, there can be no assurances that we will ultimately regain compliance with the Stockholders’ Equity Rule, or be able to maintain compliance with all other applicable requirements for continued listing on Nasdaq. If we do not regain compliance with Nasdaq’s listing rules within the time period permitted by Nasdaq, then our securities will be delisted from Nasdaq.

We cannot assure you that we will be able to regain compliance with Nasdaq listing standards. Our failure to continue to meet these requirements would result in our common stock being delisted from Nasdaq, and if our common stock is delisted, our Common Warrants would also be delisted. We and holders of our securities could be materially adversely impacted if our securities are delisted from Nasdaq. In particular:

- we may be unable to raise equity capital on acceptable terms or at all;
- we may lose the confidence of our clinical partners, which would jeopardize our ability to continue our clinical trials as currently conducted;
- the price of our common stock will likely decrease as a result of the loss of market efficiencies associated with Nasdaq and the loss of federal pre-emption of state securities laws;
- holders may be unable to sell or purchase our securities when they wish to do so;
- we may become subject to stockholder litigation;
- we may be unable to attract, or we may lose the interest of, institutional investors in our common stock;
- we may lose media and analyst coverage;

- our common stock could be considered a “penny stock”, which would likely limit the level of trading activity in the secondary market for our common stock; and
- we would likely lose any active trading market for our common stock, as it may only be traded on one of the over-the-counter markets, if at all.

***We will have to seek to raise additional funds to fund our operations including the various clinical trials being currently conducted or will be conducted in the future. Depending on the terms available to us, if these activities result in significant dilution, it may negatively impact the trading price of our common stock.***

Any additional financing that we secure may require the granting of rights, preferences or privileges senior to, *opari passu* with, those of our common stock. Any issuances by us of equity securities may be at or below the prevailing market price of our common stock and in any event may have a dilutive impact on your ownership interest, which could cause the market price of our common stock to decline. We may also raise additional funds through the incurrence of debt or the issuance or sale of other securities or instruments senior to our shares of common stock, which may be highly dilutive. The holders of any securities or instruments we may issue may have rights superior to the rights of our common stockholders. If we experience dilution from the issuance of additional securities and we grant superior rights to new securities over holders of our common stock, it may negatively impact the trading price of our common stock and you may lose all or part of your investment.

***The Common Warrants and the Pre-Funded Warrants are speculative in nature and there is not expected to be an active trading market for the Common Warrants.***

There is no established trading market for the Common Warrants or Pre-Funded Warrants and we do not expect an active trading market to develop. Without an active trading market, the liquidity of the Common Warrants and Pre-Funded Warrants will be limited.

***Holders of the Common Warrants or Pre-Funded Warrants will have no rights as a common stockholder until they acquire our common stock.***

The Common Warrants and the Pre-Funded Warrants offered in this offering do not confer any rights of common stock ownership on their holders, such as voting rights or the right to receive dividends, but rather merely represent the right to acquire shares of our common stock at a fixed price for a limited period of time. Specifically, commencing on the date of issuance, holders of the Common Warrants may exercise their right to acquire the common stock and pay an exercise price of \$[\*] per share (110% of the public offering price of a Unit), prior to five years from the date of issuance, after which date any unexercised Common Warrants will expire and have no further value. In the case of Pre-Funded Warrants, holders may exercise their right to acquire the common stock and pay an exercise price of \$0.001 per share. The Pre-Funded Warrants do not expire. Until holders of the Common Warrants or Pre-Funded Warrants acquire shares of our common stock upon exercise of the Common Warrants or Pre-Funded Warrants, the holders will have no rights with respect to shares of our common stock issuable upon exercise of the Common Warrants or Pre-Funded Warrants. Upon exercise of the Common Warrants or Pre-Funded Warrants, the holder will be entitled to exercise the rights of a common stockholder as to the security exercised only as to matters for which the record date occurs after the exercise.

***Provisions of the Common Warrants could discourage an acquisition of us by a third party.***

Certain provisions of the Common Warrants could make it more difficult or expensive for a third party to acquire us. The Common Warrants prohibit us from engaging in certain transactions constituting “fundamental transactions” unless, among other things, the surviving entity assumes our obligations under the Common Warrants. These and other provisions of the Common Warrants offered by this prospectus could prevent or deter a third party from acquiring us even where the acquisition could be beneficial to you.

***A possible “short squeeze” due to a sudden increase in demand of our shares of common stock that largely exceeds supply may lead to price volatility in our shares of common stock.***

Following this offering, investors may purchase our shares of common stock to hedge existing exposure in our shares of common stock or to speculate on the price of our shares of common stock. Speculation on the price of our shares of common stock may involve long and short exposures. To the extent aggregate short exposure exceeds the number of shares of our common stock available for purchase in the open market, investors with short exposure may have to pay a premium to repurchase our shares of common stock for delivery to lenders of our shares of common stock. Those repurchases may in turn, dramatically increase the price of our shares of common stock until investors with short exposure are able to purchase additional common shares to cover their short position. This is often referred to as a “short squeeze”. A short squeeze could lead to volatile price movements in our shares of common stock that are not directly correlated to the performance or prospects of our company and once investors purchase the shares of common stock necessary to cover their short position the price of our common stock may decline.

***An active, liquid and orderly trading market for our common stock may not develop, the price of our stock may be volatile, and you could lose all or part of your investment.***

Even though our common stock is currently listed on Nasdaq, we cannot predict the extent to which investor interest in our company will lead to the development of an active trading market in our securities or how liquid that market might become. If such a market does not develop or is not sustained, it may be difficult for you to sell your shares of common stock at the time you wish to sell them, at a price that is attractive to you, or at all. There could be extreme fluctuations in the price of our common stock if there are a limited number of shares in our public float.

The trading price of our common stock may be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. Our stock price could be subject to wide fluctuations in response to a variety of factors, which include:

- whether we achieve our anticipated corporate objectives;
- actual or anticipated fluctuations in our quarterly or annual operating results;
- changes in our financial or operational estimates;
- our ability to implement our operational plans;
- changes in the economic performance or market valuations of companies similar to ours; and
- general economic or political conditions in the United States or elsewhere.

In addition, broad market and industry factors may seriously affect the market price of companies’ stock, including ours, regardless of actual operating performance. These fluctuations may be even more pronounced in the trading market for our stock shortly following this offering. In the past, following periods of volatility in the overall market and the market price of a particular company’s securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management’s attention and resources.

***This offering may cause the trading price of our common stock to decrease.***

The number of shares of common stock underlying the securities we propose to issue and ultimately will issue if this offering is completed, may result in an immediate decrease in the trading price of our common stock. This decrease may continue after the completion of this offering. If the bid price of our common stock falls below \$1.00 per share for 30 consecutive business days, we would no longer meet Nasdaq’s minimum bid price requirement and our common stock could be subject to delisting. We cannot predict the effect, if any, that the availability of shares for future sale represented by the Pre-Funded Warrants or Common Warrants issued in connection with the offering will have on the trading price of our common stock from time to time.

***If our shares of common stock become subject to the penny stock rules, it would become more difficult to trade our shares.***

The SEC has adopted rules that regulate broker-dealer practices in connection with transactions in penny stocks. Penny stocks are generally equity securities with a price of less than \$5.00, other than securities registered on certain national securities exchanges or authorized for quotation on certain automated quotation systems, provided that current price and volume information with respect to transactions in such securities is provided by the exchange or system. If we do not retain a listing on Nasdaq and if the price of our common stock is less than \$5.00, our common stock will be deemed a penny stock. The penny stock rules require a broker-dealer, before a transaction in a penny stock not otherwise exempt from those rules, to deliver a standardized risk disclosure document containing specified information. In addition, the penny stock rules require that before effecting any transaction in a penny stock not otherwise exempt from those rules, a broker-dealer must make a special written determination that the penny stock is a suitable investment for the purchaser and receive (i) the purchaser's written acknowledgment of the receipt of a risk disclosure statement; (ii) a written agreement to transactions involving penny stocks; and (iii) a signed and dated copy of a written suitability statement. These disclosure requirements may have the effect of reducing the trading activity in the secondary market for our common stock, and therefore stockholders may have difficulty selling their shares.

***If we were to dissolve, the holders of our securities may lose all or substantial amounts of their investments.***

If we were to dissolve as a corporation, as part of ceasing to do business or otherwise, we will be required to pay all amounts owed to any creditors before distributing any assets to holders of our capital stock. There is a risk that in the event of such a dissolution, there will be insufficient funds to repay amounts owed to holders of any of our indebtedness and insufficient assets to distribute to our capital stockholders, in which case investors could lose their entire investment.

***If securities or industry analysts do not publish or cease publishing research or reports about us, our business or our market, or if they change their recommendations regarding our securities adversely, our stock price and trading volume could decline.***

The trading market for our common stock is influenced by the research and reports that industry or securities analysts may publish about us, our business, our market or our competitors. If any of the analysts who may cover us change their recommendation regarding our common stock adversely, or provide more favorable relative recommendations about our competitors, our stock price would likely decline. If any analyst who may cover us were to cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

***In making your investment decision, you should understand that we and the placement agent have not authorized any other party to provide you with information concerning us or this offering.***

You should carefully evaluate all of the information in this prospectus before investing in our company. We may receive media coverage regarding our company, including coverage that is not directly attributable to statements made by our officers, that incorrectly reports on statements made by our officers or employees, or that is misleading as a result of omitting information provided by us, our officers or employees. We and the placement agent have not authorized any other party to provide you with information concerning us or this offering, and you should not rely on unauthorized information in making an investment decision.

***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 for 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 timely delivery of shares and indemnification for breach of contract.

## CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, and the documents incorporated by reference herein may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All statements other than statements of historical facts contained in this prospectus, including statements regarding our future results of operations and financial position, business strategy and plans and our objectives for future operations, are forward-looking statements. The words "anticipate", "believe", "could", "estimate", "expect", "forecast", "intend", "may", "plan", "potential", "should", "will", "would", "might", and similar expressions are intended to identify forward-looking statements. These forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from historical results or anticipated results, including:

- We are engaged in early-stage research and as such might not be successful in our efforts to develop a portfolio of commercially viable products;
- We have incurred substantial losses since our inception and anticipate that we will continue to incur substantial and increasing losses for the foreseeable future;
- Our independent registered public accounting firm has expressed substantial doubt about our ability to continue as a going concern;
- We need significant additional financing to fund our operations and complete the development and, if approved, the commercialization of our lead product candidate, LB-100. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts;
- We currently have no source of revenues. We might never generate revenues or achieve profitability;
- Our ability to use net operating losses to offset future taxable income might be subject to limitations;
- Clinical-stage biopharmaceutical companies with product candidates in clinical development face a wide range of challenging activities which might entail substantial risk;
- We might find it difficult to enroll patients in our clinical trials which could delay or prevent the start of clinical trials for our product candidate;
- The results of preclinical studies or earlier clinical trials are not necessarily predictive of future results. Our lead product candidate in clinical trials, and any other product candidates that might advance into clinical trials, might not have favorable results in later clinical trials or receive regulatory approval;
- Clinical drug development involves a lengthy and expensive process with an uncertain outcome;
- Risks associated with operating in foreign countries could materially adversely affect our product development;
- Our current and future product candidates, the methods used to deliver them or their dosage levels 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 any regulatory approval;
- Our product development program might not uncover all possible adverse events that patients who take our lead product candidate may experience. The number of subjects exposed to our lead product candidate and the average exposure time in the clinical development program might be inadequate to detect rare adverse events or chance findings that might only be detected once the product is administered to more patients and for greater periods of time;
- Our future success is dependent on the regulatory approval of our lead product candidate;
- Our lead product candidate and future product candidates could fail to receive regulatory approval from the FDA;
- Failure to obtain regulatory approval in international jurisdictions would prevent our lead product candidate from being marketed abroad;

- Even if our current primary product candidate received regulatory approval, it might still face future development and regulatory difficulties;

- We depend on certain key scientific personnel for our success who do not work full time for us. The loss of any such personnel could adversely affect our business, financial condition and results of operations;
- We expect to rely heavily on third parties for the conduct of clinical trials of our product candidates. If these clinical trials are not successful, or if we or our collaborators are not able to obtain the necessary regulatory approvals, we will not be able to commercialize our product candidates;
- Business interruptions could adversely affect future operations, revenues, and financial conditions, and might increase our costs and expenses;
- Our failure to find third party collaborators to assist or share in the costs of product development could materially harm our business, financial condition or results of operations;
- We might be subject to claims by third parties asserting that our employees, consultants, collaborators contractors or we have misappropriated their intellectual property, or claiming ownership of what we regard as our own intellectual property;
- We cannot be certain we will be able to obtain patent protection to protect our product candidates and technology;
- If we do not obtain patent term extension in the United States under the Hatch-Waxman Act or in foreign countries under similar legislation, our business might be materially harmed;
- If we fail to comply with our obligations in agreements under which we have licensed or, might license, intellectual property rights from third parties, or if we otherwise experience disruptions to our business relationships with our licensors, we could lose rights that are important to our business;
- We might infringe the intellectual property rights of others, which may prevent or delay our product development efforts and stop us from commercializing or increase the costs of commercializing our product candidates;
- We might be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed alleged trade secrets of one or more third parties;
- Our intellectual property might not be sufficient to protect our intended products from competition, which might negatively affect our business as well as limit our partnership or acquisition appeal;
- If we are not able to protect and control our unpatented trade secrets, know-how and other technological innovation, we might suffer competitive harm;
- We might incur substantial costs prosecuting our patent applications, maintaining our patents and patent applications, enforcing our patents, defending against third party patent infringement suits, seeking invalidation of third party patents or in-licensing third party intellectual property, as a result of litigation or other proceedings relating to patent and other intellectual property rights;
- If we are unable to protect our intellectual property rights, our competitors might develop and market products with similar or identical features that might reduce demand for our potential products;
- Our commercial success depends upon attaining significant market acceptance of our current product candidate and future product candidates, if approved, among physicians, patients, healthcare payors and cancer treatment centers;
- Even if we are able to commercialize our lead product candidate or any future product candidates, the products might not receive coverage or adequate reimbursement from third party payors in the United States and in other countries in which we seek to commercialize our intended products, which could harm our business;
- Healthcare legislative measures aimed at reducing healthcare costs might have a material adverse effect on our business and results of operations;
- Price controls might be imposed in foreign markets, which might adversely affect our future profitability;
- Our relationships with customers and third party payors will be subject to applicable anti-kickback, fraud and abuse and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm and diminished profits and future earnings. If we or they are unable to comply with these provisions, we might become subject to civil and criminal investigations and proceedings that could have a material adverse effect on our business, financial condition and prospects;
- Our employees might engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could cause significant liability for us and harm our reputation;
- Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any products that we might develop;

- We face substantial competition, which might result in others discovering, developing or commercializing products before or more successfully than we do;
- Significant disruptions of information technology systems, computer system failures or breaches of information and cyber security could adversely affect our business;
- We might need to grow the size of our organization in the future, and we might experience difficulties in managing this growth;
- Inadequate funding for the FDA, the SEC and other government agencies could hinder their ability to hire and retain key leadership and other personnel, prevent new products and services from being developed or commercialized in a timely manner or otherwise prevent those agencies from performing normal business functions on which the operation of our business might rely, which could negatively impact our business;
- Unstable market and economic conditions and adverse developments with respect to financial institutions and associated liquidity risk may have serious adverse consequences on our business, financial condition and stock price;
- We are a “smaller reporting company” and we have elected to comply with certain reduced reporting and disclosure requirements which could make its common stock less attractive to investors;
- The price of our common stock might fluctuate substantially;
- A sale or perceived sale of a substantial number of shares of our common stock might cause the price of our common stock to decline;
- Market and economic conditions might negatively impact our business, financial condition and share price;
- If securities or industry analysts do not publish research or reports, or publish unfavorable research or reports about our business, our stock price and trading volume might decline;
- Future sales and issuances of our common stock could result in additional dilution of the percentage ownership of our stockholders and could cause our share price to fall;
- We do not intend to pay cash dividends on our shares of common stock so any returns will be limited to the value of our shares;
- We might be at risk of securities class action litigation;
- Our Certificate of Incorporation and our Amended and Restated Bylaws, and Delaware law might have anti-takeover effects that could discourage, delay or prevent a change in control, which might cause our stock price to decline;
- Financial reporting obligations of being a public company in the United States are expensive and time-consuming, and our management will be required to devote substantial time to compliance matters; and
- If we fail to comply with the rules under Sarbanes-Oxley related to accounting controls and procedures in the future, or, if we discover material weaknesses and other deficiencies in our internal control and accounting procedures, our stock price could decline significantly and raising capital could be more difficult.

We caution you that the foregoing list may not contain all of the forward-looking statements made in this prospectus. We have based these forward-looking statements largely on our current expectations about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy, short term

and long-term business operations and objectives, and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in “Risk Factors”. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this prospectus may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this prospectus to conform these statements to actual results or to changes in our expectations.

You should read this prospectus and the documents that we reference in this prospectus and have filed with the SEC as exhibits to the registration statement of which this prospectus is a part with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

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## USE OF PROCEEDS

We estimate that the net proceeds from this offering will be approximately \$3,495,000 (assuming the sale of all Units offered hereby at the assumed public offering price of \$2.11 per Unit, which represents the closing price of our common stock on Nasdaq on October 31, 2024 and assuming no issuance of Pre-Funded Warrants), after deducting placement agent fees and estimated offering expenses payable by us. However, because this is a reasonable best efforts offering with no minimum number of securities or amount of proceeds as a condition to closing, the actual offering amount, placement agent 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, and we may not sell all or any of the securities we are offering. As a result, we may receive significantly less in net proceeds. Based on the assumed offering price set forth above, we estimate that our net proceeds from the sale of 75%, 50% or 25% of the Units offered in this offering would be approximately \$2,565,000, \$1,635,000 and \$705,000, respectively, after deducting placement agent fees and estimated offering expenses payable by us.

We currently intend to use the net proceeds of this offering as working capital and for general corporate purposes.

The actual allocation of proceeds realized from this offering will depend upon our cash position and our working capital requirements. We cannot currently allocate specific percentages of the net proceeds to us from this offering that we may use for these purposes. Therefore, as of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. Accordingly, we will have discretion in the application of the net proceeds, and investors will be relying on our judgment regarding the application of the proceeds of this offering. Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities.

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## CAPITALIZATION

The following table sets forth our capitalization as of June 30, 2024 as follows:

- on an actual basis; and
- on an as adjusted basis to reflect the issuance and sale by us of 1,895,734 Units in this offering at the assumed public offering price of \$2.11 per Unit (assuming no issuance of Pre-Funded Warrants), after deducting placement agent fees and estimated offering expenses payable by us and the receipt by us of the proceeds of such sale.

The information below is illustrative only. Our capitalization following the closing of this offering will change based on the actual public offering price and other terms of this offering determined at pricing. You should read this table in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the consolidated financial statements and related notes included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2024, and subsequent Exchange Act reports.

|   | As of June 30, 2024   |                            |
|---|-----------------------|----------------------------|
|   | Actual<br>(Unaudited) | As Adjusted<br>(Unaudited) |
| Cash  | \$ 2,595,222          | \$ 6,090,222               |
| Stockholders’ equity:   |                       |                            |
| Preferred stock, \$0.0001 par value per share, 10,000,000 shares authorized, issued and outstanding 350,000 shares  | \$ 3,500,000          | \$ 3,500,000               |
| Common stock, \$0.0001 par value per share; 100,000,000 shares authorized, issued and outstanding 2,249,290 shares actual, and 4,145,024 shares on an as adjusted basis | 225                   | 415                        |
| Additional paid-in capital  | 49,209,883            | 52,704,693                 |
| Accumulated deficit   | (50,463,969)          | (50,463,969)               |
| Total stockholders’ equity  | 2,246,139             | 5,741,139                  |
| Total capitalization  | \$ 2,246,139          | \$ 5,741,139               |

The number of shares of our common stock outstanding set forth in the table above excludes, as of June 30, 2024:

- 72,917 shares of our common stock issuable upon the conversion of 350,000 shares of Series A Convertible Preferred Stock outstanding at a conversion rate of 0.2083 common shares per preferred share, reflecting a conversion price of \$48.00 per common share;
- 605,348 shares of common stock issuable upon the exercise of common stock options issued to members of management, consultants, and directors at a weighted average exercise price of \$13.8396 per share;
- 808,365 shares of our common stock issuable upon the exercise of outstanding common stock Warrants at a weighted average exercise price of \$16.4074 per share;
- 198,402 shares of common stock reserved for future grants pursuant to our 2020 Plan;
- 2,369,667 shares of our common stock issuable upon the exercise of the Common Warrants to be issued in this offering; and
- 56,872 shares of our common stock issuable upon the exercise of the Placement Agent Common Warrants to be issued in this offering.

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## DILUTION

If you invest in our Units in this offering, your investment will be immediately and substantially diluted to the extent of the difference between the public offering price per share of our common stock that is part of the Unit and the as adjusted net tangible book value per share of our common stock after giving effect to the offering.

Our net tangible book value (deficit) as of June 30, 2024 was \$2,246,139, or \$1.00 per share. Net tangible book value per share represents our total tangible assets less total liabilities, divided by the number of shares of common stock outstanding.

As adjusted net tangible book value dilution per share of common stock to new investors represents the difference between the amount per share of common stock that is part of the Unit paid by investors in the offering and the net tangible book value per share of common stock immediately after completion of the offering. After giving effect to the offering and our sale of the Units in the offering at an assumed public offering price of \$2.11 per Unit, and after deduction of placement agent fees from gross proceeds raised in the offering and estimated offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2024 would have been \$5,741,139 or \$1.39 per share of common stock. This represents an immediate increase in net tangible book value of \$0.39 per share of common stock to existing stockholders and an immediate dilution in net tangible book value of \$0.72 per share of common stock to investors in the offering, as illustrated in the following table, based on common shares outstanding as of June 30, 2024.

The information below is illustrative only and assumes the maximum offering amount is sold. The dilution caused by this offering will change based on the actual public offering amount and price and other terms of this offering determined at pricing. You should read this table in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the financial statements and related notes included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2024, and subsequent Exchange Act reports.

|  |         |         |
|--|---------|---------|
| Assumed offering price per share of common stock (attributing no value to Common Warrants)   |         | \$ 2.11 |
| Actual net tangible book value per share of common stock before this offering <sup>(1)</sup> | \$ 1.00 |         |
| Increase in net tangible book value per share attributable to new investors <sup>(2)</sup>   | \$ 0.39 |         |
| Net tangible book value per share after this offering <sup>(3)</sup>                         | \$ 1.39 |         |
| Immediate dilution in net tangible book value per share to new investors                     | \$ 0.72 |         |

- (1) Determined by dividing (i) net tangible book value (total assets less intangible assets) less total liabilities by (ii) the total number of shares of common stock issued and outstanding prior to the offering.
- (2) Represents the difference between (i) as adjusted net tangible book value per share after this offering and (ii) net tangible book value per share as of June 30, 2024.
- (3) Determined by dividing (i) as adjusted net tangible book value, which is our net tangible book value plus the cash proceeds of this offering, after deducting the estimated offering expenses payable by us, by (ii) the total number of shares of common stock to be outstanding following this offering.

An increase of \$0.50 in the assumed public offering price of \$2.11 per Unit would increase the net tangible book value per share after this offering by \$0.14 per share and the dilution to new investors purchasing Units in this offering by \$0.37 per share, assuming the number of Units offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting placement agent fees and estimated offering expenses payable by us.

A decrease of \$0.50 in the assumed public offering price of \$2.11 per Unit would decrease the net tangible book value per share after this offering by \$0.17 per share and the dilution to new investors purchasing Units in this offering by \$0.33 per share, assuming the number of Units offered by us, as set forth on the cover page of this prospectus, remains the same, and after deducting placement agent fees and estimated offering expenses payable by us.

If we only sell 75%, 50% or 25% of the maximum offering amount, our net tangible book value per share after this offering would be \$1.31, \$1.21 or \$1.08, respectively, and the immediate dilution in net tangible book value per share to new investors purchasing Units in this offering would be \$0.80, \$0.90 or \$1.03, respectively, assuming no Pre-Funded Warrants are issued and no Common Warrants are exercised, and after deducting placement agent fees and estimated offering expenses payable by us.

The information discussed above is illustrative only and will adjust based on the actual public offering price, the actual number of Units that we offer in this offering, and other terms of this offering determined at the time of pricing. The foregoing discussion and table assume no issuance of Pre-Funded Warrants, which if sold, would reduce the number of Units that we are offering on a one-for-one basis. In addition, we may choose to raise additional capital due to market conditions or strategic considerations. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

The number of shares of our common stock outstanding set forth in the table above excludes, as of June 30, 2024:

- 72,917 shares of our common stock issuable upon the conversion of 350,000 shares of Series A Convertible Preferred Stock outstanding at a conversion rate of 0.2083 common shares per preferred share, reflecting a conversion price of \$48.00 per common share;
- 605,348 shares of common stock issuable upon the exercise of common stock options issued to members of management, consultants, and directors at a weighted average exercise price of \$13.8396 per share;
- 808,365 shares of our common stock issuable upon the exercise of outstanding common stock Warrants at a weighted average exercise price of \$16.4074 per share;
- 198,402 shares of common stock reserved for future grants pursuant to our 2020 Plan;
- 2,369,667 shares of our common stock issuable upon the exercise of the Common Warrants to be issued in this offering; and
- 56,872 shares of our common stock issuable upon the exercise of the Placement Agent Common Warrants to be issued in this offering.

## SELECTED HISTORICAL FINANCIAL DATA

On June 2, 2023, we effected a 1-for-10 reverse stock split of our common stock. The selected historical financial data presented below was derived from our historical financial statements that have been incorporated by reference into this prospectus, and gives effect to the reverse stock split for all periods presented.

### Consolidated Statements of Operations Data

| Years Ended December 31, |      |
|--------------------------|------|
| 2023                     | 2022 |

|  |    |             |    |             |
|--|----|-------------|----|-------------|
| Revenues   | \$ | —           | \$ | —           |
| Costs and expenses:  |    |             |    |             |
| General and administrative costs:                              |    |             |    |             |
| Compensation to related parties                                |    | 1,718,180   |    | 2,547,615   |
| Patent and licensing legal and filing fees and costs           |    | 978,244     |    | 1,268,308   |
| Other costs and expenses                                       |    | 1,495,712   |    | 1,146,289   |
| Research and development costs                                 |    | 898,100     |    | 1,349,269   |
| Total costs and expenses                                       |    | 5,090,236   |    | 6,311,481   |
| Loss from operations   |    | (5,090,236) |    | (6,311,481) |
| Interest income  |    | 17,486      |    | 11,195      |
| Interest expense   |    | (16,233)    |    | (8,875)     |
| Foreign currency gain (loss)                                   |    | 1,954       |    | (3,374)     |
| Net loss   | \$ | (5,087,029) | \$ | (6,312,535) |
| Net loss per common share – basic and diluted                  | \$ | (2.66)      | \$ | (3.99)      |
| Weighted average common shares outstanding – basic and diluted |    | 1,915,838   |    | 1,582,029   |

#### Consolidated Balance Sheet Data

|   | December 31, |              |
|---|--------------|--------------|
|   | 2023         | 2022         |
| Total current assets  | \$ 4,308,620 | \$ 5,560,983 |
| Total assets  | \$ 4,308,620 | \$ 5,560,983 |
| Total current liabilities   | \$ 313,858   | \$ 395,756   |
| Total liabilities   | \$ 313,858   | \$ 395,756   |
| Stockholders' equity:   |              |              |
| Preferred Stock, \$0.0001 par value; authorized – 10,000,000 shares; issued and outstanding – 350,000 shares of Series A Convertible Preferred Stock, \$10.00 per share stated value, liquidation preference based on assumed conversion into common shares – 72,917 shares | \$ 3,500,000 | \$ 3,500,000 |
| Common stock, \$0.0001 par value; authorized – 100,000,000 shares; issued and outstanding – 2,249,290 shares and 1,664,706 shares at December 31, 2023 and 2022, respectively   | 225          | 166          |
| Additional paid-in capital  | 48,976,265   | 45,059,760   |
| Accumulated deficit   | (48,481,728) | (43,394,699) |
| Total stockholders' equity  | \$ 3,994,762 | \$ 5,165,227 |

## DESCRIPTION OF SECURITIES

### General

Our certificate of incorporation, as amended, authorizes the issuance of up to 100,000,000 shares of common stock, par value \$0.0001 per share, and up to 10,000,000 shares of preferred stock, par value \$0.0001 per share. As of September 30, 2024, there were 2,249,290 shares of common stock outstanding, which were held by 46 stockholders of record, and 350,000 shares of Series A Convertible Preferred Stock outstanding convertible into 72,917 shares of common stock.

On June 2, 2023, we effected a reverse stock split of our common stock at a ratio of 1-for-10. All share and per share information presented in this prospectus reflects the effect of the reverse stock split.

### Common Stock

Each holder of common stock is entitled to one vote for each share of common stock held on all matters submitted to a vote of the stockholders, including the election of directors. Our certificate of incorporation, as amended and bylaws do not provide for cumulative voting rights.

Subject to preferences that may be applicable to any then outstanding preferred stock, the holders of our outstanding shares of common stock are entitled to receive dividends, if any, as may be declared from time to time by our Board of Directors out of legally available funds. In the event of our liquidation, dissolution or winding up, holders of common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities, subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock.

Holders of our common stock have no pre-emptive, conversion or subscription rights, and there are no redemption or sinking fund provisions applicable to the common stock. The rights, preferences and privileges of the holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of our preferred stock that are outstanding or that we may designate and issue in the future.

### Preferred Stock

Our Board of Directors is authorized, without vote or action by our stockholders, to issue from time to time up to an aggregate of 10,000,000 shares of preferred stock in one or more series and to fix or alter the designations, preferences, rights and any qualifications, limitations or restrictions of the shares of each of these series, including, if applicable, the dividend rights and preferences, conversion rights, voting rights, terms and rights of redemption, including without limitation sinking fund provisions, redemption price or prices, liquidation rights and preferences, and the number of shares constituting any series. The issuance of preferred stock may have the effect of delaying, deferring or preventing a change in control of us without further action by our stockholders and may adversely affect the dividend, liquidation and voting and other rights of the holders of common stock. The issuance of preferred stock with voting and conversion rights may adversely affect the voting power of the holders of common stock, including the loss of voting control to others. We currently have no plans to issue any additional shares of preferred stock.

We believe that the ability to issue preferred stock without the expense and delay of a special stockholders' meeting provides us with increased flexibility in structuring possible future financings and acquisitions, and in meeting other corporate needs that might arise. This also permits the Board of Directors of the Company to issue preferred

## **Warrants**

In a private placement offering to the institutional investor that was concurrent to as registered direct offering of our securities on July 20, 2023, the Company also sold Warrants to purchase 583,334 shares of common stock. Each Warrant had an initial exercise price of \$6.00 per share, was immediately exercisable upon issuance, and expires five years thereafter on July 20, 2028. The Warrants and the shares of common stock issuable upon exercise of the Warrants were not registered under the Securities Act and were offered pursuant to the exemption provided in Section 4(a)(2) under the Securities Act and Rule 506(b) promulgated thereunder. The shares of common stock issuable upon exercise of the Common Warrants were registered for resale on a registration statement on Form S-3 declared effective by the SEC on May 2, 2024.

The registered direct offering and the concurrent private placement generated gross proceeds of \$3,499,964. The total cash costs of the registered direct offering and the private placement were \$362,925, resulting in net proceeds of \$3,137,039. Pursuant to the placement agent agreement, the Company granted the placement agent Warrants to purchase 35,000 shares of common stock at an exercise price of \$6.60 per share and expiring on July 20, 2028.

The exercise prices of the Warrants issued to the institutional investor (exercisable at \$6.00 per share) and to the placement agent (exercisable at \$6.60 per share) are subject to customary adjustments for stock splits, stock dividends, stock combinations, reclassifications, reorganizations, or similar events affecting the Company's common stock. In addition, the Warrants issued to the institutional investor contain a "fundamental transaction" provision which provides that if any defined transactions are within the Company's control and are consummated, the holder of the unexercised common stock Warrants would be entitled to receive, at its option, in exchange for extinguishment of such Warrants, cash consideration equal to a Black-Scholes valuation amount, as defined in the Warrant agreement. The fundamental transaction provision includes (i) a sale, lease, assignment, transfer, conveyance or other disposition of all or substantially all of the assets of the Company in one or a series of related transactions, or (ii) a change in control of the Company by which it, directly or indirectly, in one or more related transactions, consummates a stock or share purchase agreement or other business combination with another person or group, whereby such other person or group acquires more than 50% of the voting power of the common equity of the Company.

If such fundamental transaction is not within the Company's control, including not being approved by the Company's Board of Directors, the Warrant holder would only be entitled to receive the same type or form of consideration (and in the same proportion) equal to the Black-Scholes valuation amount of the remaining unexercised portion of the Warrant on the date of consummation of such fundamental transaction as the holders of the Company's common stock receive. Accordingly, these Warrants are classified as a component of permanent stockholders' equity. The Company will account for any cash payment for a Warrant redemption as a distribution from stockholders' equity, as and when a fundamental transaction is consummated and such cash payment is required to be made.

## **Anti-Takeover Effects of Certain Provisions in our Certificate and Bylaws**

### ***Exclusive Forum***

The certificate of incorporation provides that, unless we consent to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers, or other employee to us or to our stockholders, (iii) any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law, the certificate of incorporation or the bylaws or (iv) any action asserting a claim governed by the internal affairs doctrine. However, this provision does not apply to suits brought to enforce a duty or liability created by the Exchange Act. In addition, the Court of Chancery of the State of Delaware and the federal district courts will have concurrent jurisdiction for the resolution of any suit brought to enforce any duty or liability created by the Securities Act. Notwithstanding the foregoing, the inclusion of such provisions in the certificate of incorporation will not be deemed to be a waiver by us or our stockholders of the obligation to comply with federal securities laws, rules and regulations.

Although we believe these provisions benefit the Company by providing increased consistency in the application of Delaware law in the types of lawsuits to which it applies, these provisions may have the effect of discouraging lawsuits against the Company's directors and officers. Furthermore, the enforceability of choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find these types of provisions to be inapplicable or unenforceable.

## ***Advance Notice of Stockholder Proposals and Nominations***

Our bylaws include an advance notice procedure for stockholders to nominate candidates for election as directors or to bring other business before any meeting of our stockholders. The stockholder notice procedure provides that only persons who are nominated by, or at the direction of, the Board of Directors, or by a stockholder who has given timely written notice prior to the meeting at which directors are to be elected, will be eligible for election as directors and that, at a stockholders' meeting, only such business may be conducted as has been brought before the meeting by, or at the direction of, the Board of Directors or by a stockholder who has given timely written notice of such stockholder's intention to bring such business before such meeting.

Under the stockholder notice procedure, for notice of stockholder nominations or other business to be made at a stockholders' meeting to be timely, such notice must be received by us not earlier than the close of business on the 120th calendar day and not later than the close of business on the 90th calendar day prior to the one-year anniversary of the immediately preceding year's annual meeting or as otherwise provided in the bylaws.

A stockholder's notice to us proposing to nominate a person for election as a director or proposing other business must contain certain information specified in the bylaws, including the identity and address of the nominating stockholder, a representation that the stockholder is a record holder of our stock entitled to vote at the meeting and information regarding each proposed nominee or each proposed matter of business that would be required under the federal securities laws to be included in a proxy statement soliciting proxies for the proposed nominee or the proposed matter of business.

The stockholder notice procedure may have the effect of precluding a contest for the election of directors or the consideration of stockholder proposals if the proper procedures are not followed, and of discouraging or deterring a third party from conducting a solicitation of proxies to elect its own slate of directors or to approve its own proposal, without regard to whether consideration of such nominees or proposals might be harmful or beneficial to us and our stockholder.

## ***Restrictions on Call of Special Meetings***

Our bylaws provide that special meetings of stockholders can only be called by the Board of Directors, Chief Executive Officer or President (in the absence of a Chief Executive Officer), but not by our stockholders or any other person or persons.

## ***No Cumulative Voting***

The certificate of incorporation does not authorize cumulative voting for the election of directors.

### **Preferred Stock Authorization**

Our Board of Directors, without stockholder approval, has the authority under our certificate of incorporation to issue preferred stock with rights superior to the rights of the holders of common stock. As a result, preferred stock, while not intended as a defensive measure against takeovers, could be issued quickly and easily, could adversely affect the rights of holders of common stock and could be issued with terms calculated to delay or prevent a change of control of the Company or make removal of management more difficult.

### **Transfer and Common Warrant Agent**

The transfer agent and registrar for our common stock and the Warrant Agent for the Warrants is Computershare Trust Company, N.A.

### **Nasdaq Listing**

Our common stock is currently listed on Nasdaq under the symbol “LIXT”.

The Warrants issued in our November 2020 public offering are currently listed on Nasdaq under the symbol “LIXTW”.

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

### **Common Stock**

The material terms and provisions of our common stock are described under the caption “Description of Securities”.

### **Common Warrants**

*Overview.* The following summary of certain terms and provisions of the Common Warrants offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the Common Warrant agent agreement between us the Common Warrant Agent, and the form of Common Warrant which is filed as an exhibit to the registration statement of which this prospectus is a part. Each Common Warrant issued in this offering entitles the registered holder to purchase one share of our common stock at an exercise price equal to \$[\*] per share (equal to 110% of the public offering price of the Units), subject to adjustment as discussed below, immediately following the issuance of such Common Warrant, terminating at 5:00 p.m., New York City time, on the fifth anniversary of the original issuance date.

*Exercisability.* The Common Warrants are exercisable at any time after their original issuance date until the fifth anniversary of the original issuance date. The Common Warrants may be exercised upon surrender of the Common Warrant on or prior to the expiration date at the offices of the Common Warrant Agent, with the exercise form included with the Common Warrant completed and executed as indicated. If we fail to maintain the effectiveness of the registration statement and current prospectus relating to the common stock issuable upon exercise of the Common Warrants, the holders of the Common Warrants shall have the right to exercise the Common Warrants via a cashless exercise feature provided for in the Common Warrants, until such time as there is an effective registration statement and current prospectus. See “— Cashless Exercise” below.

*Exercise Limitation.* A holder (together with its affiliates) may not exercise any portion of the Common Warrants to the extent that the holder would own more than 4.99% (or, at the election of the holder, 9.99%) of the outstanding common stock immediately after exercise, except that upon at least 61 days’ prior notice from the holder to us, the holder may increase the amount 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.

*Exercise Price.* The exercise price per whole share of our common stock purchasable upon the exercise of the Common Warrants is \$[\*] (or 110% of the public offering price per Unit) per share of common stock. The Common Warrants will be immediately exercisable and may be exercised at any time up to the date that is the fifth anniversary of the original issuance date. The exercise price and number of shares of common stock issuable upon exercise of the Common Warrants may be adjusted in certain circumstances, including in the event of a stock dividend or recapitalization, reorganization, merger or consolidation. However, the Common Warrants will not be adjusted for issuances of common stock at prices below their exercise price.

*Cashless Exercise.* If, at any time after the issuance of the Common Warrants, a holder of the Common Warrants exercises the Common Warrants and 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 (or a prospectus is not available for the resale of shares of common stock underlying the Common Warrants), 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 shall instead receive upon such exercise (either in whole or in part) only the net number of shares of common stock determined according to a formula set forth in the Common Warrants.

*Fractional Shares.* No fractional shares of common stock will be issued upon exercise of the Common Warrants. If, upon exercise of the Common Warrant, a holder would be entitled to receive a fractional interest in a share, we will, in our discretion and upon exercise, 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.

*Transferability.* Subject to applicable laws, the Common Warrants may be offered for sale, sold, transferred or assigned at the option of the holder without our consent.

*Exchange Listing.* There is no established public trading market for the Common Warrants, and we do not expect a market to develop. In addition, we do not intend to list the Common Warrants on any securities exchange or nationally recognized trading system.

*Fundamental Transactions.* In the event of a “fundamental transaction”, as described in the Common Warrants and generally including any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding common stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding common stock, the holders of the Common Warrants will be entitled to receive upon exercise of the Common Warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the Common Warrants immediately prior to such fundamental transaction.

*Rights as a Stockholder.* Except by virtue of such holder’s ownership of shares of our common stock, the holder of a Common Warrant does not have the rights or privileges of a holder of our common stock, including any voting rights, until the holder exercises the Common Warrant.

### **Pre-Funded Warrants**

The terms of the Pre-Funded Warrants, if any, are identical to the terms of the Common Warrants, except that:

- the exercise price of the Pre-Funded Warrants is \$0.01;
- the Pre-Funded Warrants may be exercised on a cashless basis at any time; and
- the term of the Pre-Funded Warrants does not expire.

## PLAN OF DISTRIBUTION

We are offering on a reasonable best efforts basis up to 1,895,734 Units, based on an assumed public offering price of \$2.11 per Unit, which represents the closing price of our common stock on Nasdaq on October 31, 2024, for gross proceeds of up to approximately \$4,000,000, before deduction of placement agent fees and offering expenses. There is no minimum amount of proceeds that is a condition to closing of this offering. The actual amount of gross proceeds, if any, in this offering could vary substantially from the gross proceeds from the sale of the maximum amount of securities being offered in this prospectus.

Pursuant to a Placement Agency Agreement, dated as of October 8, 2024, we have engaged WallachBeth to act as our exclusive placement agent to solicit offers to purchase the securities offered by this prospectus. The placement agent is not purchasing or selling any securities, nor is it required to arrange for the purchase and sale of any specific number or dollar amount of securities, other than to use its “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. Investors purchasing securities offered hereby will have the option to execute a securities purchase agreement with us. In addition to the rights and remedies available to all investors in this offering under federal and state securities laws, the investors who enter into a securities purchase agreement will also be able to bring claims of breach of contract against us. 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. The placement agent may engage one or more subagents or selected dealers in connection with this offering.

The Placement Agency Agreement provides that the placement agent’s obligations are subject to conditions contained in the Placement Agency Agreement.

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The Units will be offered at a fixed price and are expected to be issued in a single closing. There is no minimum number of Units to be sold or minimum aggregate offering proceeds for this offering to close. We expect this offering to be completed not later than two business days following the commencement of this offering and we will deliver all securities issued in connection with this offering delivery versus payment (“DVP”) receipt versus payment (“RVP”) upon our receipt of investor funds. Accordingly, neither we nor the placement agent has made any arrangements to place investor funds in an escrow account or trust account since the placement agent will not receive investor funds in connection with the sale of securities offered hereunder. This offering will end no later than November 30, 2024, unless we decide to terminate the offering earlier (which we may do at any time at our discretion) prior to that date.

We will deliver the securities being issued to the investors upon receipt of investor funds for the purchase of the securities offered pursuant to this prospectus. We expect to deliver the securities being offered pursuant to this prospectus on or about November \_\_, 2024.

### Placement Agent Fees and Expenses

Upon the closing of this offering, we will pay the placement agent a cash transaction fee equal to 7.0% of the aggregate gross cash proceeds to us from the sale of the securities in the offering. In addition, we will reimburse the placement agent for certain of its out-of-pocket expenses incurred in connection with this offering, including the placement agent’s legal fees, in an amount not to exceed \$75,000 upon completion of this offering.

The following table shows the public offering price, placement agent fees and proceeds, before expenses, to us, assuming the sale of all Units in this offering and no sale of any Pre-Funded Warrants in this offering.

|                                 | Per Unit | Total |
|---------------------------------|----------|-------|
| Public offering price           | \$       | \$    |
| Placement agent fees            |          |       |
| Proceeds to us, before expenses | \$       | \$    |

We estimate that the total expenses of the offering, including registration and filing fees, printing fees and legal and accounting expenses, but excluding the placement agent fees, will be approximately \$225,000, all of which are payable by us. This figure includes, among other things, the placement agent’s expenses of up to \$75,000 (including its legal fees) that we have agreed to reimburse.

### Placement Agent Common Warrants

We have also agreed to issue to WallachBeth (or its permitted assignees) Common Warrants (the “Placement Agent Common Warrants”) to purchase a number of our shares of common stock equal to an aggregate of 3% of the total number of Units sold in this offering. The Placement Agent Common Warrants will have an exercise price equal to 110% of the public offering price per Unit. The Placement Agent Common Warrants are exercisable immediately after issuance and will expire five (5) years after the effective date of the registration statement. However, neither the Placement Agent Common Warrants nor the common stock underlying them will be transferable until one hundred eighty (180) days after the effective date of the registration statement of which this prospectus forms a part. The Placement Agent Common Warrants are not redeemable by us. We have agreed to a one-time demand registration of our shares of common stock underlying the Placement Agent Common Warrants at our expense for a period of five (5) years from the effective date of the registration statement related to this offering and an additional demand registration at the holders’ expense for a period of five (5) years from the effective date of the registration statement related to this offering. The Placement Agent Common Warrants also provide for unlimited “piggyback” registration rights at our expense with respect to the underlying shares of common stock during the five-year period commencing from the effective date of the registration statement related to this offering. The Placement Agent Common Warrants and our shares of common stock underlying the Placement Agent Common Warrants have been deemed compensation by the Financial Industry Regulatory Authority, or FINRA, and are therefore subject to a 180-day lock-up pursuant to Rule 5110(g)(1) of FINRA. The placement agent (or permitted assignees under the Rule) may not sell, transfer, assign, pledge or hypothecate the Placement Agent Common Warrants or the securities underlying the Placement Agent Common Warrants, nor will they engage in any hedging, short sale, derivative, put or call transaction that would result in the effective economic disposition of the Placement Agent Common Warrants or the underlying securities for a period of six months from the effective date of this offering, except to any FINRA member participating in the offering and their bona fide officers or partners. The Placement Agent Common Warrants will provide for adjustment in the number and price of such Placement Agent Common Warrants (and our shares of common stock underlying such Placement Agent Common Warrants) to prevent dilution in the event of a forward or reverse stock split, stock dividend or similar recapitalization.

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### Right of First Refusal

We have agreed to grant WallachBeth, upon the closing of this offering for a period of three (3) months from the closing, a right of first refusal to participate in any of our future public and private equity and debt offerings.

### Lock-Up Agreements

We have agreed for a period of ninety (90) days after this offering is completed and each of our officers and directors and executive officers have agreed for a period of forty-five (45) days after this offering is complete, subject to certain exceptions not to offer, issue, sell, contract to sell, encumber, grant any option for the sale of or otherwise dispose of any shares of our common stock or other securities convertible into or exercisable or exchangeable for our common stock for a period without the prior written consent of the placement agent, subject to certain exceptions.

The placement agent may in its sole discretion and at any time without notice release some or all of the shares subject to lock-up agreements prior to the expiration of the lock-up period. When determining whether or not to release shares from the lock-up agreements, the placement agent will consider, among other factors, the security holder's reasons for requesting the release, the number of shares for which the release is being requested and market conditions at the time.

#### **Tail**

Within ten (10) months following termination of our engagement agreement with WallachBeth, if we effect a sale of securities with a party introduced by WallachBeth for discussions on negotiations regarding an offering, WallachBeth shall be entitled to the compensation described above with respect to such transaction.

#### **Indemnification**

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

#### **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 commissions received by it and any profit realized on the resale of the securities sold by it while acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. As an underwriter, the placement agent would be required to comply with the requirements of the Securities Act and the Exchange Act, including, without limitation, Rule 10b-5 and Regulation M under the Exchange Act. These rules and regulations may limit the timing of purchases and sales of our securities by the placement agent acting as principal. Under these rules and regulations, the placement agent (i) may not engage in any stabilization activity in connection with our securities and (ii) may not 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 it has completed its participation in the distribution.

#### **Determination of Offering Price and Common Warrant Exercise Price**

The actual public offering price of the securities we are offering, and the exercise price of the Common Warrants and the Pre-Funded Warrants included in the Units that we are offering, were negotiated between us, the placement agent and the investors in the offering based on the trading of our common stock prior to the offering, among other things. Other factors considered in determining the public offering price of the securities we are offering, as well as the exercise price of the Common Warrants that we are offering, include our history and prospects, the market price of our common stock on Nasdaq, 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, the general conditions of the securities markets at the time of the offering and such other factors as were deemed relevant.

#### **Electronic Distribution**

A prospectus in electronic format may be made available on a website maintained by the placement agent or an affiliate. Other than this prospectus, the information on the placement agent's website and any information contained in any other website maintained by the placement agent 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. In connection with the offering, the placement agent or selected dealers may distribute prospectuses electronically. No forms of electronic prospectus other than prospectuses that are printable as Adobe® PDF will be used in connection with this offering.

Other than the prospectus in electronic format, the information on the placement agent's website and any information contained in any other website maintained by the placement agent is not part of the 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 in its capacity as placement agent and should not be relied upon by investors.

#### **Other Relationships and Affiliations**

The placement agent and its affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. The placement agent and its affiliates may from time to time in the future engage with us and perform services for us or in the ordinary course of their business for which they will receive customary fees and expenses. In the ordinary course of their various business activities, the placement agent and its affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of us. The placement agent and its respective affiliates may also make investment recommendations and/or publish or express independent research views in respect of these securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in these securities and instruments.

#### **Listing**

Our common stock is currently listed on Nasdaq under the symbol "LIXT". The Warrants issued in our November 2020 public offering are currently listed on Nasdaq under the symbol "LIXTW".

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

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

#### **LEGAL MATTERS**

The validity of the securities offered by this prospectus will be passed upon by TroyGould PC, Los Angeles, CA. Sichenzia, Ross, Ference, Carmel LLP, New York, NY, is acting as counsel to the placement agent.

#### **EXPERTS**

Weinberg & Company, P.A., our independent, registered public accounting firm, has audited our consolidated financial statements as of December 31, 2023 and 2022 and for the years then ended included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, which is incorporated by reference into this prospectus and elsewhere in the registration statement of which this prospectus is a part. Our financial statements are incorporated by reference in reliance on Weinberg & Company P.A.'s report, which includes an explanatory paragraph regarding substantial doubt about the Company's ability to continue as a going concern, given on their authority as experts in

## INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus certain information we file with it, which means that we can disclose important information by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Because we are incorporating by reference future filings with the SEC, this prospectus is continually updated and those future filings may modify or supersede some of the information included or incorporated in this prospectus. We incorporate by reference the documents listed below and all documents subsequently filed with the SEC (excluding any portions of any Form 8-K that are not deemed “filed” pursuant to the General Instructions of Form 8-K) pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, after the date of this prospectus and prior to the date this offering is terminated or we issue all of the securities under this prospectus:

- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2023, filed with the SEC on March 19, 2024;
- our Quarterly Report on Form 10-Q for the quarterly periods ended [March 31, 2024](#) and [June 30, 2024](#), filed with the SEC on May 9, 2024 and August 08, 2024, respectively;
- our Current Reports on Form 8-K filed with the SEC on [January 30, 2024](#), [February 26, 2024](#), [February 27, 2024](#), [March 22, 2024](#), [March 28, 2024](#), [May 9, 2024](#), [May 20, 2024](#), [May 29, 2024](#), [June 5, 2024](#), [June 14, 2024](#), [June 14, 2024](#), [July 11, 2024](#), [July 12, 2024](#), [August 19, 2024](#), [August 23, 2024](#), [August 26, 2024](#), [September 5, 2024](#), and [October 23, 2024](#); and
- the description of our common stock contained in the registration statement on [Form 8-A](#), filed with the SEC on November 17, 2020, and any amendment or report filed for the purpose of updating such description (including [Exhibit 4.1](#) to the Annual Report on Form 10-K for the fiscal year ended December 31, 2023).

To obtain copies of these filings, see “Where You Can Find More Information” in this prospectus. Nothing in this prospectus shall be deemed to incorporate information furnished, but not filed, with the SEC, including pursuant to Item 2.02 or Item 7.01 of Form 8-K and any corresponding information or exhibit furnished under Item 9.01 of Form 8-K.

Information in this prospectus supersedes related information in the documents listed above and information in subsequently filed documents supersedes related information in both this prospectus and the incorporated documents.

## WHERE YOU CAN FIND MORE INFORMATION

We are subject to the periodic reporting requirements of the Exchange Act, and we will file periodic reports, proxy statements and other information with the SEC. These periodic reports, proxy statements and other information are available at [www.sec.gov](http://www.sec.gov). We maintain a website at <https://lixte.com>. We have not incorporated by reference into this prospectus the information contained in, or that can be accessed through, our website, and you should not consider it to be a part of this prospectus. You may access our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those 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. You may also request a copy of these filings (other than exhibits to these documents unless the exhibits are specifically incorporated by reference into these documents or referred to in this prospectus), at no cost, by writing us at 680 East Colorado Boulevard, Suite 180, Pasadena, California 91101 or contacting us at (631) 830-7092.

We have filed with the SEC a registration statement under the Securities Act relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You may review a copy of the registration statement and the documents incorporated by reference herein through the SEC’s website at [www.sec.gov](http://www.sec.gov).

Up to 1,895,734 Units, each consisting of

One Share of Common Stock or One Pre-Funded Warrant to purchase One Share of Common Stock and 1.25 Common Warrants to purchase up to One Share of Common Stock

Up to 1,895,734 Shares of Common Stock Underlying the Pre-Funded Warrants

Up to 2,369,667 Shares of Common Stock Underlying the Common Warrants

LIXTE BIOTECHNOLOGY HOLDINGS, INC.

## PROSPECTUS

*Sole Placement Agent*

**WallachBeth Capital LLC**

November \_\_, 2024

## PART II

### INFORMATION NOT REQUIRED IN PROSPECTUS

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

The following table sets forth the various expenses, all of which will be borne by the registrant, in connection with the sale and distribution of the securities being



registered, other than the placement agent fees. All amounts shown are estimates except for the SEC registration fee and the FINRA filing fee.

|                                     |    |         |
|-------------------------------------|----|---------|
| SEC registration fee                | \$ | 1,454   |
| FINRA fees                          |    | 1,925   |
| Transfer agent and registrar fees   |    | 2,000   |
| Printing and engraving expenses     |    | 5,000   |
| Accounting fees and expenses        |    | 50,000  |
| Legal fees and expenses             |    | 75,000  |
| Placement agent's expense allowance |    | 75,000  |
| Miscellaneous                       |    | 14,621  |
| Total                               | \$ | 225,000 |

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

Section 102(b)(7) of the Delaware General Corporation Law ("DGCL") provides that a Delaware corporation, in its certificate of incorporation, may limit the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duties as a director, except for liability for any:

- transaction from which the director derived an improper personal benefit;
- act or omission not in good faith or that involved intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares; or
- breach of the director's duty of loyalty to the corporation or its stockholders.

Under Section 145 of the DGCL, we can indemnify our directors and officers against liabilities they may incur in such capacities, including liabilities under the Securities Act of 1933, as amended (the "Securities Act"). Our certificate of incorporation (Exhibit 3.1 to this registration statement) provides that we must indemnify our directors and officers to the fullest extent permitted by law and requires us to pay expenses incurred in defending or other participating in any proceeding in advance of its final disposition upon our receipt of an undertaking by the director or officer to repay such advances if it is ultimately determined that the director or officer is not entitled to indemnification. Our certificate of incorporation further provides that rights conferred under such certificate of incorporation do not exclude any other right such persons may have or acquire under the certificate of incorporation, the bylaws, any statute, agreement, vote of stockholders or disinterested directors or otherwise.

The certificate of incorporation also provides that, pursuant to Delaware law, our directors shall not be liable for monetary damages for breach of the directors' fiduciary duty of care to us and our stockholders. This provision in the certificate of incorporation does not eliminate the duty of care, and in appropriate circumstances equitable remedies such as injunctive or other forms of non-monetary relief will remain available under Delaware law. In addition, each director will continue to be subject to liability for breach of the director's duty of loyalty to us for acts or omissions not in good faith or involving intentional misconduct, or knowing violations of law, for actions leading to improper personal benefit to the director, and for payment of dividends or approval of stock repurchases or redemptions that are unlawful under Delaware law. The provision also does not affect a director's responsibilities under any other law, such as the federal securities laws or state or federal environmental laws. We also intend to obtain directors' and officers' liability insurance pursuant to which our directors and officers are insured against liability for actions taken in their capacities as directors and officers.

In addition, we have entered into agreements to indemnify our directors and certain of our officers in addition to the indemnification provided for in the certificate of incorporation. These agreements, among other things, indemnify our directors and some of our officers for certain expenses (including attorney's fees), judgments, fines and settlement amounts incurred by such person in any action or proceeding, including any action by or in our right, on account of services by that person as a director or officer of our company or as a director or officer of our subsidiary, or as a director or officer of any other company or enterprise that the person provides services to at our request.

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

The information below lists all of the securities sold by us during the past three years which were not registered under the Securities Act: None

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

A list of exhibits to this registration statement is set forth in the Index to Exhibits as presented below.

##### INDEX TO EXHIBITS

| Exhibit Number | Description of Document  |
|----------------|--|
| 2.1            | <a href="#"><u>Share Exchange Agreement dated as of June 8, 2006 among the Company, John S. Kovach and Lixte Biotechnology, Inc., filed as Exhibit 2.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on July 7, 2006 and incorporated herein by reference.</u></a>                                 |
| 3.1            | <a href="#"><u>Certificate of Incorporation, as filed with the Delaware Secretary of State on May 24, 2005, filed as Exhibit 3.1 to the Company's Registration Statement on Form 10-SB, as filed with the Securities and Exchange Commission on August 3, 2005 and incorporated herein by reference.</u></a>   |
| 3.2            | <a href="#"><u>Certificate of Amendment of Certificate of Incorporation, filed as Appendix A to the Company's Information Statement, as filed with the Securities and Exchange Commission on September 19, 2006 and incorporated herein by reference.</u></a>  |
| 3.3            | <a href="#"><u>Certificate of Designations for the Company's Series A Convertible Preferred Stock, filed as Exhibit 4.01 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on March 18, 2015 and incorporated herein by reference.</u></a>   |
| 3.4            | <a href="#"><u>Certificate of Amendment of Certificate of Designations of the Series A Convertible Preferred Stock, filed as Exhibit 3.4 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015, as filed with the Securities and Exchange Commission on March 28, 2016 and incorporated herein by reference.</u></a> |
| 3.5            | <a href="#"><u>Amended and Restated Bylaws, filed as Exhibit 3.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on November 10, 2022 and incorporated herein by reference.</u></a>  |
| 3.6            | <a href="#"><u>Certificate of Amendment of Certificate of Incorporation, filed as Exhibit 3.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on November 27, 2020 and incorporated herein by reference.</u></a>   |
| 3.7            | <a href="#"><u>Certificate of Amendment to the Certificate of Incorporation of Lixte Biotechnology Holdings, Inc., filed as Exhibit 3.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on June 6, 2023 and incorporated herein by reference.</u></a>  |

- 4.1 [Description of Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934, as amended, filed as Exhibit 4.1 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, as filed with the Securities and Exchange Commission on March 25, 2020 and incorporated herein by reference.](#)
- 4.2 [Form of Public Common Warrant included in Unit, filed as Exhibit 4.2 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on November 27, 2020 and incorporated herein by reference.](#)
- 4.3 [Form of Common Stock Purchase Common Warrant, filed as Exhibit 4.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on July 20, 2023 and incorporated herein by reference.](#)

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- 4.4 [Form of Placement Agent Common Warrant, filed as Exhibit 4.3 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on July 20, 2023 and incorporated herein by reference.](#)
- 4.5 [Form of Common Stock Purchase Warrant\\*](#)
- 4.6 [Form of Pre-Funded Warrant\\*](#)
- 4.7 [Form of Placement Agent Warrant\\*](#)
- 5.1 [Opinion of TroyGould PC\\*](#)
- 10.1 [Master Agreement between Lixte Biotechnology Holdings, Inc. and Theradex Systems, Inc. dated January 12, 2010, filed as Exhibit 10.15 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2012, as filed with the Securities and Exchange Commission on March 15, 2013 and incorporated herein by reference.](#)
- 10.2 [Materials Cooperative Research and Development Agreement between Lixte Biotechnology Holdings, Inc. and the National Institute of Neurological Disorders and Stroke dated October 18, 2013, filed as Exhibit 10.16 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2013, as filed with the Securities and Exchange Commission on March 21, 2014 and incorporated herein by reference.](#)
- 10.3 [Collaboration Agreement between Lixte Biotechnology Holdings, Inc. and BioPharmaWorks LLC effective September 14, 2015, filed as Exhibit 10.01 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on September 18, 2015 and incorporated herein by reference.](#)
- 10.4 [Collaboration Agreement for an Investigator-Initiated Clinical Trial between Lixte Biotechnology Holdings, Inc. and the Spanish Sarcoma Group as of July 31, 2019 \(certain portions of this exhibit have been omitted based on a request for confidential treatment filed by the Company with the Securities and Exchange Commission that was granted on September 19, 2019\), filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on August 6, 2019 and incorporated herein by reference.](#)
- 10.5 [Employment Agreement Between the Company and Robert N. Weingarten, filed as Exhibit 10.02 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on August 18, 2020 and incorporated herein by reference.±](#)
- 10.6 [Employment Agreement Between the Company and Eric Forman, filed as Exhibit 10.02 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on July 17, 2020 and incorporated herein by reference.±](#)
- 10.7 [Amendment to Employment Agreement between the Company and Eric Forman, filed as Exhibit 10.21 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2020, as filed with the Securities and Exchange Commission on March 26, 2021.±](#)
- 10.8 [Second Amendment to Employment Agreement between the Company and Eric Forman, filed as Exhibit 10.15 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2022, as filed with the Securities and Exchange Commission on March 29, 2023 and incorporated herein by reference.±](#)
- 10.9 [Lixte Biotechnology Holdings, Inc. 2020 Stock Incentive Plan, filed as Exhibit 10.1 to the Company Current Report on Form 8-K, as filed with the Securities and Exchange Commission on July 17, 2020 and incorporated herein by reference.±](#)
- 10.10 [Lixte Biotechnology Holdings, Inc. 2020 Stock Incentive Plan \(as amended\), filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on November 28, 2023 and incorporated herein by reference.±](#)

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- 10.11 [Development Collaboration Agreement by and between Lixte Biotechnology Holdings, Inc. and the Netherlands Cancer Institute, Amsterdam, and Oncoed Institute, Utrecht, entered into on October 8, 2021 \(certain portions of this Exhibit have been omitted\), filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2021, as filed with the Securities and Exchange Commission on November 10, 2021 and incorporated herein by reference.](#)
- 10.12 [Insider Trading Policy, filed as Exhibit 10.21 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2022, as filed with the Securities and Exchange Commission on March 29, 2023 and incorporated herein by reference.](#)
- 10.13 [Compensation Clawback Policy, filed as Exhibit 10.16 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2023, as filed with the Securities and Exchange Commission on March 19, 2024 and incorporated herein by reference.±](#)
- 10.14 [Amendment to Contract between Lixte Biotechnology Holdings, Inc. and MRI Global effective April 17, 2022, filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2023, as filed with the Securities and Exchange Commission on May 10, 2023 and incorporated herein by reference.](#)
- 10.15 [Securities Purchase Agreement, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on July 20, 2023 and incorporated herein by reference.](#)
- 10.16 [Employment Agreement between the Company and Bastiaan van der Baan effective September 26, 2023, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on September 27, 2023 and incorporated herein by reference.](#)

- 10.17 [Amendment No. 1 to Development Collaboration Agreement by and between Lixte Biotechnology Holdings, Inc. and the Netherlands Cancer Institute, Amsterdam, and the Oncode Institute, Utrecht, entered into on October 8, 2021, filed as Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2023, as filed with the Securities and Exchange Commission on November 9, 2023 and incorporated herein by reference.](#)
- 10.18 [Amendment No. 2 to Development Collaboration Agreement by and between Lixte Biotechnology Holdings, Inc. and the Netherlands Cancer Institute, Amsterdam, and the Oncode Institute, Utrecht, entered into on October 13, 2023 \(certain portions of this Exhibit have been omitted\), filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on October 17, 2023 and incorporated herein by reference.](#)
- 10.19 [Termination letter between H. Lee Moffitt Cancer Center and Research Institute, Inc. and the Company dated October 4, 2023 and effective as of September 30, 2023, filed as Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2023, as filed with the Securities and Exchange Commission on November 9, 2023 and incorporated herein by reference.](#)
- 10.20 [Exclusive Patent License Agreement between Lixte Biotechnology, Inc. and the National Institute of Neurological Disorders and Stroke and the National Cancer Institute, each a component of the National Institute of Health, effective as of February 23, 2024, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on February 26, 2024 and incorporated herein by reference.](#)
- 10.21 [Consulting Agreement between the Company and Dr. Jan Schellens dated as of May 31, 2024, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on June 5, 2024 and incorporated herein by reference.†](#)

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- 10.22 [Clinical Trial Agreement between the Company and the Netherlands Cancer Institute dated as of June 10, 2024, filed as Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the Securities and Exchange Commission on June 14, 2024 and incorporated herein by reference.](#)
- 10.23 [Form of Placement Agency Agreement\\*](#)
- 10.24 [Form of Securities Purchase Agreement\\*](#)
- 21.1 [Subsidiaries of the Registrant, filed as Exhibit 21.1 to the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2022, as filed with the Securities and Exchange Commission on March 29, 2023 and incorporated herein by reference.](#)
- 23.1 [Consent of Weinberg & Company, P.A., Independent Registered Public Accounting Firm\\*](#)
- 23.2 [Consent of TroyGould PC \(included in Exhibit 5.1\)](#)
- 24.1 [Power of Attorney \(included on the signature line\)\\*](#)
- 107 [Filing Fee Table](#)

\* Filed herewith.

† Indicates a management contract or any compensatory plan, contract or arrangement.

#### Item 17. Undertakings.

The undersigned registrant hereby undertakes:

- (a)(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
- (i) To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;
  - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed 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% 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 the undertakings set forth in paragraphs (a)(1)(i), (a)(1)(ii) and (a)(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 SEC by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement or are contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this registration statement.

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- (2) That, for the purposes of determining any liability under the Securities Act of 1933, 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.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That 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;
  - (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.
- (b) The undersigned registrant hereby undertakes that, for the purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the 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 Act and will be governed by the final adjudication of such issue.
- (d) That,
- (1) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act of 1933 shall be deemed to be part of this registration statement as of the time it was declared effective.
  - (2) For the purpose of determining any liability under the Securities Act of 1933, 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.

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## 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 Pasadena, State of California on November 1, 2024.

### Lixte Biotechnology Holdings, Inc.

By: /s/ Bastiaan van der Baan  
Name: Bastiaan van der Baan  
Title: Chief Executive Officer and President  
(Principal Executive Officer)

## POWER OF ATTORNEY

Each person whose signature appears below appoints Bastiaan van der Baan and Robert Weingarten, and each of them, each of whom may act without the joinder of the other, as their true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution for them and in their name, place and stead, in any and all capacities to sign any and all amendments (including post-effective amendments) to this registration statement (and to any registration statement filed pursuant to Rule 462 under the Securities Act of 1933, as amended), and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully to all intents and purposes as they might or would do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

| <u>Signature</u>  | <u>Title</u>  | <u>Date</u>      |
|---|---|------------------|
| <u>/s/ Bastiaan van der Baan</u><br>Bastiaan van der Baan | Chief Executive Officer, President, and Chairman of the Board of Directors<br>(Principal Executive Officer) | November 1, 2024 |
| <u>/s/ Robert Weingarten</u><br>Robert Weingarten         | Chief Financial Officer<br>(Principal Financial and Accounting Officer)                                     | November 1, 2024 |
| <u>*</u><br>Stephen Forman                                | Director  | November 1, 2024 |
| <u>*</u><br>Yun Yen                                       | Director  | November 1, 2024 |
| <u>*</u><br>Rene Bernards                                 | Director  | November 1, 2024 |

\*  
\_\_\_\_\_  
Regina Brown

Director

November 1, 2024

\*By: /s/ Robert Weingarten, Attorney-in-Fact

NEITHER THIS SECURITY NOR THE SECURITIES FOR WHICH THIS SECURITY IS EXERCISABLE HAVE BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS. THIS SECURITY AND THE SECURITIES ISSUABLE UPON EXERCISE OF THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

### COMMON STOCK PURCHASE WARRANT

### LIXTE BIOTECHNOLOGY HOLDINGS, INC.

Warrant Shares: [ ]

Issue Date: [ ], 2024

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 [ ], 2024 (the "Initial Exercise Date") and on or prior to 5:00 p.m. (New York City time) on [ ], 2029 (the "Termination Date") but not thereafter, to subscribe for and purchase from Lixte Biotechnology Holdings, 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. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Securities Purchase Agreement (the "Purchase Agreement"), dated [ ], 2024, among the Company and the purchasers signatory thereto.

#### 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. The Company shall have no obligation to inquire with respect to or otherwise confirm the authenticity of the signature(s) contained on any Notice of Exercise nor the authority of the person so executing such 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 within one (1) Business 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.**

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b) Exercise Price. The exercise price per share of Common Stock under this Warrant shall be \$[ ]<sup>1</sup>, subject to adjustment hereunder (the "Exercise Price").

c) Cashless Exercise. If at the time after the six month anniversary of the Issue Date, there is no effective registration statement registering, or the prospectus contained therein is not available for the resale of the Warrant Shares by the Holder, then 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) both executed and 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) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the highest Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. ("Bloomberg") within 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 the two (2) hours following 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 holding period of the Warrant Shares being issued may be tacked on to the holding period of this Warrant. The Company agrees not to take any position contrary to this Section 2(c).

"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 (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 Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by 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 (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 the OTCQB Venture Market (“OTCQB”) or the OTCQX Best Market (“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 (“Pink Market”) operated by the OTC Markets, Inc. (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 Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

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) the Warrant Shares are eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144 (assuming cashless exercise of the Warrants), 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 earliest of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise, (ii) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company and (iii) 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 that payment of the aggregate Exercise Price (other than in the instance of a cashless exercise) is received by the Company by such 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 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 fifth 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.

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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 by delivering written notice to the Company at any time prior to the delivery of such Warrant Shares (in which case any liquidated damages payable under Section 2(d)(i) shall no longer be payable).

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 (other than any such failure that is solely due to any action or inaction by the Holder with respect to such exercise), 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-



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% 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 61st 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.

### 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) Reserved.

c) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time while this Warrant is outstanding, the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to all of the record holders of all of the 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).

d) 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 all of the 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 but excluding a stock split) (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

e) 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 (other than a reincorporation in a different state or a similar transaction pursuant to which the surviving company remains a public company, (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 (and its Subsidiaries, taken as a whole), (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 50% or more of the outstanding Common Stock or 50% or more 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 other than a stock split, 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 but excluding a stock split) with another Person or group of Persons whereby such other Person or group acquires 50% or more of the outstanding shares of Common Stock or 50% or more 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, 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 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 contemplated 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 Fundamental Transaction and the Termination Date, (B) an expected volatility equal to the 100 day volatility 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 greater of (i) 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 and (ii) the highest VWAP during the period beginning on the Trading Day immediately preceding the public announcement of the applicable contemplated Fundamental Transaction (or the consummation of the applicable Fundamental Transaction, if earlier) and ending on the Trading Day of the Holder’s request pursuant to this Section 3(c) and (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 five Business Days of the Holder’s election (or, if later, on 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(e) 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 and the other Transaction Documents 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(e) 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.

f) 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.

g) 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; provided, however, that the Company may satisfy this notice requirement in this Section 3(g) by filing such notice with the Commission pursuant to a Current Report on Form 8-K or Quarterly Report on Form 10-Q or Annual Report on Form 10-K or in a press release.

ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form other than a stock

split) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock, (excluding any granting or issuance of rights to all of the Company's stockholders pursuant to a stockholder rights plan) (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 4 calendar days prior to the applicable record or effective date hereinafter specified (unless such information is filed with the Commission on its EDGAR system in which case a notice shall not be required), 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.

b) 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, subject to the prior written consent of the Holder, reduce the then current Exercise Price to any amount and for any period of time deemed appropriate by the board of directors of the Company.

#### Section 4. Transfer of Warrant.

a) Transferability. Subject to compliance with any applicable securities laws and the conditions set forth in Section 4(d) hereof and to the provisions of Section 4.1 of the Purchase Agreement, 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.

d) Transfer Restrictions. If, at the time of the surrender of this Warrant in connection with any transfer of this Warrant, the transfer of this Warrant shall not be either (i) registered pursuant to an effective registration statement under the Securities Act and under applicable state securities or blue sky laws or (ii) eligible for resale without volume or manner-of-sale restrictions or current public information requirements pursuant to Rule 144, the Company may require, as a condition of allowing such transfer, that the Holder or transferee of this Warrant, as the case may be, comply with the provisions of Section 5.7 of the Purchase Agreement.

e) Representation by the Holder. The Holder, by the acceptance hereof, represents and warrants that it is acquiring this Warrant and, upon any exercise hereof, will acquire the Warrant Shares issuable upon such exercise, for its own account and not with a view to or for distributing or reselling such Warrant Shares or any part thereof in violation of the Securities Act or any applicable state securities law, except pursuant to sales registered or exempted under the Securities Act.

#### 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).

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.

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 or the Purchase Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable attorneys' fees, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

h) 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 248 Route 25A, No. 2, East Setauket, NY, 11733, Attention: Mr. Bastiaan van der Baan, Chief Executive Officer, email address: bvanderbaan@lixte.com, 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 and the Holders of a majority of the Warrant Shares into which the outstanding Warrants issued on the Issue Date are exercisable that are outstanding as of such date.

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.

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.

**LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

By: \_\_\_\_\_

Bastiaan van der Baan  
Chief Executive Officer

**NOTICE OF EXERCISE**

TO: LIXTE BIOTECHNOLOGY HOLDINGS, 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
- ☐ if permitted 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

## LIXTE BIOTECHNOLOGY HOLDINGS, INC.

Warrant Shares: [ ]

Issue Date: [ ], 2024

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 LIXTE BIOTECHNOLOGY HOLDINGS, INC., a Delaware corporation (the “Company”), up to [ ] (as subject to adjustment hereunder, the “Warrant Shares”) of the common stock, par value \$0.0001 per share, of the Company (“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. Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Securities Purchase Agreement (the “Purchase Agreement”), dated [ ], 2024, among the Company and the purchasers signatory thereto.

Section 2. Exercise.

- a) Exercise of Warrant. Subject to the terms and conditions hereof, 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 facsimile copy or PDF copy submitted by e-mail (or e-mail attachment) of the Notice of Exercise substantially in the form attached hereto as Exhibit A (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 Warrant 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 applicable and specified in the attached Notice of Exercise. The Company shall have no obligation to inquire with respect to or otherwise confirm the authenticity of the signature(s) contained on any Notice of Exercise nor the authority of the person so executing such Notice of Exercise. The Company shall have no obligation to inquire with respect to or otherwise confirm the authenticity of the signature(s) contained on any Notice of Exercise nor the authority of the person so executing such 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 within one (1) 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.**

- b) Exercise Price. The aggregate exercise price of this Warrant, except for a nominal exercise price of \$0.001 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 \$0.001 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, including in the event this Warrant shall not have been exercised prior to the Termination Date. The remaining unpaid exercise price per share of Common Stock under this Warrant shall be \$0.001, 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) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and 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)(68) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise 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 both executed and delivered pursuant to Section 2(a) hereof after 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.

“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 the Common Stock is not then listed or quoted on a Trading Market and if prices for the Common Stock are then reported on OTCQB or OTCQX, as applicable, 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 a Trading Market or 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 Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by 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 the Common Stock is not then listed or quoted on a Trading Market and if prices for the Common Stock are then reported on OTCQB or OTCQX, as applicable, 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 a Trading Market or 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 Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

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 (the "Transfer Agent") 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 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 (A) the earlier of (i) two (2) Trading Days and (ii) the number of days comprising the Standard Settlement Period, in each case after the delivery to the Company of the Notice of Exercise and (B) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company (such date, the "Warrant Share Delivery Date") provided that payment of the aggregate Exercise Price (other than in the instance of a cashless exercise) is received by the Company by such 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 by the Warrant Share Delivery Date. If 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, provided that payment of the aggregate Exercise Price (other than in the instance of a cashless exercise) is received by the Company by such 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 fifth 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.

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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 Warrants 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 as Exhibit B 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.

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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 and shall have no liability for exercises of the Warrant that are not in compliance with the Beneficial Ownership Limitation, except to the extent the Holder relies on a number of outstanding shares of Common Stock that was provided by the Company. 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, and the Company shall have no obligation to verify or confirm the accuracy of such determination and shall have no liability for exercises of the Warrant that are not in compliance with the Beneficial Ownership Limitation, except to the extent the Holder relies on the number of outstanding shares of Common Stock that was provided by the Company. 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 request of a Holder, the Company shall within two (2) Trading Days 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 Common Stock outstanding immediately after giving effect to the issuance of shares of Common Stock issuable upon exercise of this Warrant. The Holder, upon written 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 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 sixty-first (61st) 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. If the Warrant is unexercisable as a result of the Holder's Beneficial Ownership Limitation, no alternate consideration is owing to the Holder.

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### 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 while this Warrant is outstanding the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to all of 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).

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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 the Company's 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 voting power of the outstanding common and preferred stock 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 (other than a stock split), 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 (other than a stock split)) with another Person or group of Persons whereby such other Person or group acquires greater than 50% of the voting power of the outstanding common and preferred stock 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 and the other Transaction Documents 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, the provisions of this Warrant and the other Transaction Documents 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.

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.

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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 facsimile or 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; provided, however, that the Company may satisfy this notice requirement in this Section 3(f) by filing such notice with the Commission pursuant to a Current Report on Form 8-K, Quarterly Report on Form 10-Q or Annual Report on Form 10-K.
- ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form other than a stock split) 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 (excluding any granting or issuance of rights to all of the Company’s shareholders pursuant to a shareholder rights plan), (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 is a party, any sale or transfer of all or substantially all of the assets of the Company, 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 facsimile or email to the Holder at its last facsimile number or email address as it shall appear upon the Warrant Register of the Company, at least four (4) 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 Company’s 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.
- iii. Voluntary Adjustment by the Company. Subject to the rules and regulations of the Trading Market, the Company may at any time during the term of this Warrant, subject to the prior written consent of the Holder, reduce the then current Exercise Price to any amount and for any period of time deemed appropriate by the board of directors of the Company.

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Section 4. Transfer of Warrant.

a) Transferability. Subject to compliance with any applicable securities laws, 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 Exercise 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 the rights of a Holder to receive Warrant Shares on a “cashless exercise” only as permitted in Section 2(c), and to receive the cash payments contemplated pursuant to Sections 2(d)(i) and 2(d)(iv), in no event will 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 Trading Day, then, such action may be taken or such right may be exercised on the next succeeding Trading Day.

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d) Authorized Shares. The Company covenants that, at all times 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 (it being understood that this Warrant shall not in any case prevent the Company from effecting any such amendment, reorganization, transfer, consolidation, merger, dissolution, issuance or sale). 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) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the provisions of the Purchase Agreement.

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, notwithstanding the fact that the right to exercise this Warrant terminates on the Termination Date. 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 notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered in accordance with the notice provisions of the Purchase Agreement.

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.

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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 and the Holder.

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)

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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.

**LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

By: \_\_\_\_\_  
Name: Bastiaan van der Baan  
Title: Chief Executive Officer

[SIGNATURE PAGE TO PRE-FUNDED COMMON STOCK PURCHASE WARRANT]

**EXHIBIT A**

**NOTICE OF EXERCISE**

TO: **LIXTE BIOTECHNOLOGY HOLDINGS, 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

☐ if permitted 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: \_\_\_\_\_

**EXHIBIT B**

**ASSIGNMENT FORM**

(To assign the foregoing Warrant, execute this form and supply required information. Do not use this form to exercise the Warrant 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:

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Dated: \_\_\_\_\_, \_\_\_\_\_

Holder's Signature:

Holder's Address:

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NEITHER THIS SECURITY NOR THE SECURITIES FOR WHICH THIS SECURITY IS EXERCISABLE HAVE BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS. THIS SECURITY AND THE SECURITIES ISSUABLE UPON EXERCISE OF THIS SECURITY MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

# PLACEMENT AGENT WARRANT

## LIXTE BIOTECHNOLOGY HOLDINGS, INC.

Warrant Shares: [ ]

Issue Date: [ ], 2024

THIS COMMON STOCK PURCHASE WARRANT (the "Warrant") certifies that, for value received, WallachBeth Capital LLC 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 [ ], 2024 (the "Initial Exercise Date") and on or prior to 5:00 p.m. (New York City time) on [ ], 2029 (the "Termination Date") but not thereafter, to subscribe for and purchase from Lixte Biotechnology Holdings, 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.** Capitalized terms used and not otherwise defined herein shall have the meanings set forth in that certain Placement Agent Agreement (the "Placement Agent Agreement"), dated [ ], 2024, among the Company and the WallachBeth Capital LLC (the "Placement Agent") signatory thereto.

### 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) on (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. The Company shall have no obligation to inquire with respect to or otherwise confirm the authenticity of the signature(s) contained on any Notice of Exercise nor the authority of the person so executing such 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 within one (1) Business 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.**

b) **Exercise Price.** The exercise price per share of Common Stock under this Warrant shall be \$[ ]<sup>1</sup>, subject to adjustment hereunder (the "Exercise Price").

c) **Cashless Exercise.** If at the time after the six month anniversary of the Issue Date, there is no effective registration statement registering, or the prospectus contained therein is not available for the resale of the Warrant Shares by the Holder, then 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) both executed and delivered pursuant to Section 2(a) hereof on a day that is not a Trading Day or (2) both executed and 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) at the option of the Holder, either (y) the VWAP on the Trading Day immediately preceding the date of the applicable Notice of Exercise or (z) the Bid Price of the Common Stock on the principal Trading Market as reported by Bloomberg L.P. ("Bloomberg") as of the time of the Holder's execution of the applicable Notice of Exercise if such Notice of Exercise is executed during "regular trading hours" on a Trading Day and is delivered within two (2) hours thereafter (including until two (2) hours after the close of "regular trading hours" on a Trading Day) pursuant to Section 2(a) hereof 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 both executed and delivered pursuant to Section 2(a) hereof after 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 holding period of the Warrant Shares being issued may be tacked on to the holding period of this Warrant. The Company agrees not to take any position contrary to this Section 2(c).

"**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 (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 Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by 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 (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 the OTCQB Venture Market (“OTCQB”) or the OTCQX Best Market (“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 (“Pink Market”) operated by the OTC Markets, Inc. (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 Purchasers of a majority in interest of the Securities then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

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) the Warrant Shares are eligible for resale by the Holder without volume or manner-of-sale limitations pursuant to Rule 144 (assuming cashless exercise of the Warrants), 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 earliest of (i) one (1) Trading Day after the delivery to the Company of the Notice of Exercise, (ii) one (1) Trading Day after delivery of the aggregate Exercise Price to the Company and (iii) 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 that payment of the aggregate Exercise Price (other than in the instance of a cashless exercise) is received by the Company by such 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 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 fifth 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.

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 by delivering written notice to the Company at any time prior to the delivery of such Warrant Shares (in which case any liquidated damages payable under Section 2(d)(i) shall no longer be payable).

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 (other than any such failure that is solely due to any action or inaction by the Holder with respect to such exercise), 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-



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% 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 61st 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.

### 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) Reserved.

c) Subsequent Rights Offerings. In addition to any adjustments pursuant to Section 3(a) above, if at any time while this Warrant is outstanding, the Company grants, issues or sells any Common Stock Equivalents or rights to purchase stock, warrants, securities or other property pro rata to all of the record holders of all of the 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). To the extent that this Warrant has not been partially or completely exercised at the time of grant of the Purchase Rights, such portion of the Purchase Rights shall be held in abeyance for the benefit of the Holder until the Holder has exercised this Warrant.

d) 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 all of the 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 but excluding a stock split) (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). 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, 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, (and its Subsidiaries, taken as a whole) (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 the 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 50% or more of the outstanding Common Stock, (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, spinoff or scheme of arrangement) with another Person or group of Persons whereby such other Person or group acquires more than 50% of the outstanding Common Stock (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Purchase Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, the number Common Stock of the successor or acquiring corporation or of the Company, if it is the surviving corporation, and any additional or alternative consideration (the "Alternative 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. For purposes of any such exercise, the determination of the Exercise Price shall be appropriately adjusted to apply to such Alternative Consideration based on the amount of Alternative Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Exercise Price among the Alternative Consideration in a reasonable manner reflecting the relative value of any different components of the Alternative Consideration. If holders of the 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 Alternative 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, and to 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 Common Stock acquirable and receivable upon 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 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).

Upon the occurrence of any such Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for (so that from and after the date of such Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the "Company" shall refer instead to the Successor Entity), and may exercise every right and power of, the Company and shall assume all of the obligations of the Company, under this Warrant and the other Transaction Documents with the same effect as if such Successor Entity had been named as the Company herein.

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; provided, however, that the Company may satisfy this notice requirement in this Section 3(g) by filing such notice with the Commission pursuant to a Current Report on Form 8-K or Quarterly Report on Form 10-Q or Annual Report on Form 10-K or in a press release.

ii. Notice to Allow Exercise by Holder. If (A) the Company shall declare a dividend (or any other distribution in whatever form other than a stock split) on the Common Stock, (B) the Company shall declare a special nonrecurring cash dividend on or a redemption of the Common Stock (excluding any granting or issuance of rights to all of the Company's stockholders pursuant to a stockholder rights plan), (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 4 calendar days prior to the applicable record or effective date hereinafter specified (unless such information is filed with the Commission on its EDGAR system in which case a notice shall not be required), 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. Subject to compliance with any applicable securities laws and the conditions set forth in Section 4(d) hereof, 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

d) Transfer Restrictions. [RESERVED]

e) Representation by the Holder. The Holder, by the acceptance hereof, represents and warrants that it is acquiring this Warrant and, upon any exercise hereof, will acquire the Warrant Shares issuable upon such exercise, for its own account and not with a view to or for distributing or reselling such Warrant Shares or any part thereof in violation of the Securities Act or any applicable state securities law, except pursuant to sales registered or exempted under the Securities Act.

#### 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.

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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.

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 or the Placement Agent Agreement, if the Company willfully and knowingly fails to comply with any provision of this Warrant, which results in any material damages to the Holder, the Company shall pay to the Holder such amounts as shall be sufficient to cover any costs and expenses including, but not limited to, reasonable attorneys' fees, including those of appellate proceedings, incurred by the Holder in collecting any amounts due pursuant hereto or in otherwise enforcing any of its rights, powers or remedies hereunder.

h) 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 248 Route 25A, No. 2, East Setauket, NY, 11733, Attention: Mr. Bastiaan van der Baan, Chief Executive Officer, email address: bvanderbaan@lixte.com, 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.

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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 and the Holders of a majority of the Warrant Shares into which the outstanding Warrants issued on the Issue Date are exercisable that are outstanding as of such date.

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)

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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.

**LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

By:  
Bastiaan van der Baan  
Chief Executive Officer

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#### NOTICE OF EXERCISE

TO: LIXTE BIOTECHNOLOGY HOLDINGS, 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

☐ if permitted 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:



David L. Ficksman • (310) 789-1290 • dficksman@troygould.com

**TroyGould pc**  
 1801 Century Park East, 16th Floor  
 Los Angeles, California 90067-2367  
**Tel** (310) 553-4441 | **Fax** (310) 201-4746  
 www.troygould.com  
 File No.

October 29, 2024

LIXTE Biotechnology Holdings, Inc.  
 680 E. Colorado Boulevard, Suite 180  
 Pasadena, CA 91101

Re: Lixte Biotechnology Holdings, Inc.  
 Registration Statement on Form S-1  
 (File No.333-282781)

Dear Ladies and Gentlemen:

We have acted as counsel to Lixte Biotechnology Holdings, Inc., a Delaware corporation (the “Company”), in connection with the preparation and filing with the Securities and Exchange Commission (the “Commission”) of the above-caption registration statement under the Securities Act of 1933, as amended (the “Securities Act”), initially filed with the Commission on October 23, 2024 (the “Registration Statement”). The Company filed the Registration Statement in connection with the proposed registration of: (i) Units (each, a “Unit”), with each Unit consisting of (A) one share (the “Shares”) of common stock, par value \$0.0001, of the Company (“Common Stock”); and (B) one and one quarter Common Stock warrants to purchase one share of common stock (the “Common Stock Warrants”) and (ii) pre-funded units in lieu thereof (each, a “Pre-Funded Unit”), with each Pre-Funded Unit consisting of (A) one pre-funded warrant exercisable for one share of Common Stock (each, a “Pre-Funded Warrant” and, together with the Common Stock Warrants, the “Warrants,” and, each share of Common Stock underlying a Pre-Funded Warrant, a “Pre-Funded Warrant Share” and, together with the shares underlying the Common Stock Warrants, the “Warrant Shares”), and (B) one Common Stock Warrant. This opinion is being rendered in connection with the filing of the Registration Statement with the Commission.

In connection with this opinion, we have examined originals or copies (certified or otherwise identified to our satisfaction) of (i) the Company’s Certificate of Incorporation, as amended, and currently in effect, (iii) the Registration Statement and related Prospectus, (iv) the form of Pre-Funded Warrant, (v) the form of Common Stock Warrant, and (vi) such corporate records, agreements, documents and other instruments, and such certificates or comparable documents of public officials or of officers and representatives of the Company, as we have deemed relevant and necessary as a basis for the opinion hereinafter set forth.

In such examination, we have assumed the genuineness of all signatures, the legal capacity of all natural persons, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified, conformed or photostatic copies, and the authenticity of the originals of such latter documents. As to certain questions of fact material to this opinion, we have relied upon certificates or comparable documents of officers and representatives of the Company and have not sought to independently verify such facts.



LIXTE Biotechnology Holdings, Inc.  
October 29, 2024  
Page 2

Based on the foregoing, and in reliance thereon, and subject to the qualifications, limitations, exceptions and assumptions set forth herein, we are of the opinion that, having been issued and sold in exchange for payment in full to the Company of all consideration required therefor as applicable, including with regard to the Units, the Pre-Funded Units, the Shares, the Warrants, and the Warrant Shares, and as described in the Registration Statement:

- i. The Units, when delivered upon payment of the agreed upon consideration therefor, will constitute the valid and binding obligations of the Company, enforceable against the Company in accordance with its terms;
- ii. The Pre-Funded Units, when delivered upon payment of the agreed upon consideration therefor, will constitute valid and binding obligations of the Company, enforceable against the Company in accordance with its terms;
- iii. The Shares included in the Units, when issued against payment therefor, will be validly issued, fully paid and non-assessable shares of Common Stock of the Company;
- iv. The Warrants included in the Units and Pre-Funded Units, when issued against payment therefor, will constitute the legal, valid and binding obligation of the Company, enforceable against the Company in accordance with their terms, except that (a) such enforceability may be limited by bankruptcy, insolvency or other similar laws affecting the enforcement of creditors' rights in general and (b) the remedies of specific performance and injunctive and other forms of injunctive relief may be subject to equitable defenses; and
- v. The Warrant Shares have been duly authorized by all necessary corporate action on the part of the Company (and assuming the Company will have sufficient authorized shares of Common Stock for any issuance of Warrant Shares upon any exercise of the Warrants), and when issued, sold and delivered by the Company pursuant to the exercise of the Warrants against payment therefor, will be validly issued, fully paid and non-assessable shares of Common Stock of the Company.

The opinion expressed herein is limited to the General Corporation Law of the State of Delaware (including reported judicial decisions interpreting the General Corporation Law of the State of Delaware) and we express no opinion as to the effect on the matters covered by this letter of the laws of any other jurisdiction.

We assume no obligation to update or supplement any of our opinions to reflect any changes of law or fact that may occur. We hereby consent to the filing of this letter as an exhibit to the Registration Statement and to the reference to our firm under the caption "Legal Matters" in the Prospectus which is a part of the Registration Statement. In giving such consents, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the Rules and Regulations of the Commission promulgated thereunder.

Very truly yours,

/s/ TroyGould PC

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## PLACEMENT AGENCY AGREEMENT

[ ], 2024

Lixte Biotechnology Holdings, Inc.  
 680 East Colorado Boulevard, Suite 180  
 Pasadena, CA 91101  
 Attn: Chief Executive Officer

Dear Mr. Bastiaan van der Baan:

This letter (the “**Agreement**”) constitutes the agreement between WallachBeth Capital LLC (the “**Placement Agent**”) and Lixte Biotechnology Holdings, Inc., a Delaware corporation (the “**Company**”), that the Placement Agent shall serve as the exclusive placement agent for the Company, on a reasonable “best efforts” basis, in connection with the proposed offering (the “**Placement**”) of units (the “**Units**”), each consisting of one share of common stock, par value \$0.0001 per share (the “**Common Stock**”), or one pre-funded warrant to purchase one share of Common Stock (the “**Pre-Funded Warrant**”) and one and one-quarter (1.25) common stock purchase warrants to purchase one share of Common Stock (each, a “**Common Warrant**”, and, together with the Units, Common Stock, and Pre-Funded Warrants, the “**Securities**”). The Securities actually placed by the Placement Agent are referred to herein as the “**Placement Securities**.” The Units, the Pre-Funded Warrants, the Common Warrants, and the shares of Common Stock underlying the Pre-Funded Warrants and Common Warrants will be offered and sold under the Company’s registration statement on Form S-1 (File No. 333-282781). The documents executed and delivered by the Company and the Purchasers (as defined below) in connection with the Placement, including, without limitation, a securities purchase agreement (the “**Purchase Agreement**”), are collectively referred to herein as the “**Transaction Documents**.”

The terms of the Placement are to be mutually agreed upon by the Company and purchasers signatories to the Purchase Agreement (each, a “**Purchaser**” and collectively, the “**Purchasers**”), and nothing herein confers upon the Placement Agent the power or authority to bind the Company or any Purchaser, or constitutes an obligation for the Company to issue any Placement Securities or complete the Placement. The Company expressly acknowledges and agrees that the Placement Agent’s obligations hereunder are on a best efforts basis only and that the execution of this Agreement does not constitute a commitment by the Placement Agent to purchase the Securities and does not ensure the successful placement of the Securities, or any portion thereof, or the success of the Placement Agent with respect to securing any other financing on behalf of the Company. The Placement Agent may retain other brokers or dealers to act as sub-agents or selected-dealers on its behalf in connection with the Placement. Certain affiliates of the Placement Agent may participate in the Placement by purchasing some of the Securities. The sale of Securities to any Purchaser will be evidenced by a Purchase Agreement between the Company and such Purchaser in a form reasonably acceptable to the Company and the Purchaser. Capitalized terms that are not otherwise defined herein have the meanings given to such terms in the Purchase Agreement. Prior to the signing of any Purchase Agreement, officers of the Company will be available to answer inquiries from prospective Purchasers.

#### Section 1. Representations and Warranties of the Company; Covenants of the Company.

(a) Representations of the Company. With respect to the Placement Securities, each of the representations and warranties (together with any related disclosure schedules thereto) and covenants made by the Company to the Purchasers in the Purchase Agreement in connection with the Placement, is hereby incorporated herein by reference into this Agreement (as though fully restated herein) and is, as of the date of this Agreement and as of the Closing Date, hereby made to, and in favor of, the Placement Agent. In addition to the foregoing, the Company represents and warrants that there are no affiliations with any Financial Industry Regulatory Authority, Inc. (“**FINRA**”) member firm participating in the Placement among the Company’s officers, directors or, to the knowledge of the Company, any five percent (5.0%) or greater security holders of the Company.

(b) Covenants of the Company. The Company covenants and agrees to continue to retain (i) an independent public accounting firm registered with the Public Company Accounting Oversight Board (“**PCAOB**”) for a period of at least three (3) years after the Closing Date and (ii) a competent transfer agent with respect to the Placement Securities for a period of three (3) years after the Closing Date. In addition, except for an Exempt Issuance, from the date hereof until 45 days after the Closing Date, the Company shall not (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 amendment or supplement thereto, other than filing the final Prospectus or a registration statement on Form S-8 in connection with any employee benefit plan. In addition, from the date hereof until 12 months 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 shares 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 (other than in connection with a stock split or stock dividend or similar event) 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. 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.

Section 2. Representations of the Placement Agent. The Placement Agent represents and warrants that it (i) is a member in good standing of FINRA, (ii) is registered as a broker/dealer under the Securities Exchange Act of 1934, as amended (the “**Exchange Act**”) and the securities laws of each state in which an offer or sale of Placement Securities is made (unless exempt from the respective state’s broker-dealer registration requirements), (iii) is licensed as a broker/dealer under the laws of the United States of America, applicable to the offers and sales of the Placement Securities by the Placement Agent, (iv) is and will be a corporate body validly existing under the laws of its place of incorporation, and (v) has full power and authority to enter into and perform its obligations under this Agreement. The Placement Agent will immediately notify the Company in writing of any change in its status with respect to subsections (i) through (v) above. The Placement Agent covenants that it will use its reasonable best efforts to conduct the Placement hereunder in compliance with the provisions of this Agreement and the requirements of applicable law.

Section 3. Compensation. In consideration of the services to be provided for hereunder, the Company shall pay to the Placement Agent and/or its respective designees a cash fee of seven percent (7.0%) of the aggregate purchase price paid by each purchaser of the Placement Securities (the “**Cash Fee**”). The Placement Agent reserves the right to reduce any item of compensation or adjust the terms thereof as specified herein in the event that a determination is made by FINRA to the effect that the Placement Agent’s aggregate compensation is in excess of that permitted by FINRA Rules or that the terms thereof require adjustment. In addition, on the Closing Date, the Company shall issue to the Placement Agent (or its permitted assignees) warrants to purchase a number of shares of Common Stock equal to an aggregate of 3.0% of the total number of Units sold in this offering, which will have an exercise price equal to 110% of the public offering price per Unit, are exercisable immediately after issuance and will expire five years after the effective date of the registration statement.

Section 4. 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 Placement Securities (including all printing and engraving costs); (ii) all fees and expenses of the registrar and transfer agent of the Shares; (iii) all necessary issue, transfer, and other stamp taxes in connection with the issuance and sale of the Placement 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 Base Prospectus, and each Prospectus Supplement, and all amendments and supplements thereto, and this Agreement; (vi) all filing fees, reasonable attorneys' fees, and expenses incurred by the Company in connection with qualifying or registering (or obtaining exemptions from the qualification or registration of) all or any part of the Placement Securities for offer and sale under the state securities or blue sky laws or the securities laws of any other country; (vii) the fees and expenses associated with including the Placement Securities on the Trading Market; (viii) up to Seventy-Five Thousand Dollars (\$75,000) for accountable expenses related to legal fees of counsel to the Placement Agent.

**Section 5. Tail Fee.** The Placement Agent shall be entitled to compensation under Section 3, calculated in the manner set forth herein with respect to any public or private offering or other financing or capital-raising transaction of any kind ("**Tail Financing**") to the extent that such Tail Financing is (i) provided to the Company by investors that were, during the term of this Agreement, introduced to the Company by the Placement Agent for discussions on negotiations regarding the purchase of the Securities and (ii) consummated at any time within the ten (10)-month period following the expiration or termination of this Agreement. The issuance of any stock or equity of the Company to its officers, directors, or employees shall not be deemed a Tail Financing. Upon expiration of this Agreement, the Placement Agent shall provide the Company with a list of all investors whose future investments in the Company will be subject the compensation described in this Section 5. Failure by the Placement Agent to provide such list of investors shall not be deemed a waiver of their right to received compensation pursuant to this Section 5.

**Section 5.1. Right of First Refusal.** For a period of three (3) months from the Closing Date, the Company hereby grants a right of first refusal to the Placement Agent to act as lead underwriter or book- running manager or placement agent for each and every future public and private equity, equity-linked, convertible or debt (excluding commercial bank debt) offerings of the Company, or any successor to or any subsidiary of the Company during such three (3) month period. If the Placement Agent fails to accept an offer within ten (10) Business Days after the receipt of a notice containing the material terms of a proposed financing by registered mail or overnight courier service addressed to the Placement Agent, then the Placement Agent shall have no further claim or right with respect to the financing proposal contained in such notice. If, however, the terms of such financing proposal are subsequently modified in any material respect, the preferential right referred to herein shall apply to such modified proposal as if the original proposal had not been made. The Placement Agent's failure to exercise its preferential right with respect to any particular proposal shall not affect its preferential rights relative to future proposals.

#### **Section 6. Indemnification.**

(a) To the extent permitted by law, with respect to the Placement Securities, the Company shall indemnify the Placement Agent and its affiliates, stockholders, directors, officers, employees, members, and controlling persons (within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act) against all losses, claims, damages, expenses, and liabilities, as the same are incurred (including reasonable actual and documented fees and expenses of counsel), relating to or arising out of its activities hereunder or pursuant to this Agreement, except to the extent that any losses, claims, damages, expenses, or liabilities (or actions in respect thereof) are found in a final judgment (not subject to appeal) by a court of law to have resulted primarily and directly from the Placement Agent's willful misconduct or gross negligence in performing the services described herein. Notwithstanding anything set forth herein to the contrary, the Company agrees to indemnify the Placement Agent, to the fullest extent set forth in this Section 6, against any and all claims asserted by any or person or entity alleging that the Placement Agent was not permitted or entitled to act as a placement agent herein, or that the Company was not permitted to hire or retain the Placement Agent herein, including but not limited to any claims arising out of any purported right of first refusal another person or entity claims to have to act as a placement agent or any similar role with respect to the Company or its securities.

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(b) Promptly after receipt by the Placement Agent of notice of any claim or the commencement of any action or proceeding with respect to which the Placement Agent is entitled to indemnify hereunder, the Placement Agent will immediately notify the Company in writing of such claim or of the commencement of such action or proceeding, but failure or delay of notification to so notify the Company shall not relieve the Company from any obligation it may have hereunder, except and only to the extent such failure results in the forfeiture by the Company of substantial rights and defenses or materially adversely impacts the Company. If the Company so elects or is requested by the Placement Agent, the Company will assume the defense of such action or proceeding and will employ counsel reasonably satisfactory to the Placement Agent and will pay the reasonable fees and expenses of such counsel. Notwithstanding the preceding sentence, the Placement Agent will be entitled to employ its own counsel separate from counsel for the Company and from any other party in such action if counsel for the Placement Agent reasonably determines that it would be inappropriate under the applicable rules of professional responsibility for the same counsel to represent both the Company and the Placement Agent. In such event, the reasonable fees and disbursements of no more than one such separate counsel will be paid by the Company, in addition to reasonable fees of local counsel. The Company will have the right to settle the claim or proceeding, *provided that* the Company will not settle any such claim, action, or proceeding without the prior written consent of the Placement Agent, which will not be unreasonably withheld. The Company will not be liable for settlement of any action effected without its written consent, which may not be unreasonably withheld, conditioned, or delayed.

(c) The Company agrees to notify the Placement Agent promptly of the assertion against it or any other person of any claim or the commencement of any action or proceeding relating to a transaction contemplated by this Agreement.

(d) If for any reason the foregoing indemnity is unavailable to the Placement Agent or insufficient to hold the Placement Agent harmless, then the Company shall contribute to the amount paid or payable by the Placement Agent as a result of such losses, claims, damages, or liabilities in such proportion as is appropriate to reflect not only the relative benefits received by the Company on the one hand and the Placement Agent on the other, but also the relative fault of the Company on the one hand and the Placement Agent on the other that resulted in such losses, claims, damages, or liabilities, as well as any relevant equitable considerations. The amounts paid or payable by a party in respect of losses, claims, damages, and liabilities referred to above shall be deemed to include any legal or other fees and expenses incurred in defending any litigation, proceeding, or other action or claim. Notwithstanding the provisions hereof, the Placement Agent's share of the liability hereunder shall not be in excess of the amount of fees actually received, or to be received, by the Placement Agent under this Agreement (excluding any amounts received as reimbursement of expenses incurred by the Placement Agent).

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(e) The provisions of this Section 6 will remain in full force and effect, survive the expiration or termination of this Agreement, and be in addition to any liability that the Company might otherwise have to any indemnified party under this Agreement, whether or not the transaction contemplated by this Agreement is completed.

**Section 7. Engagement Term.** The Placement Agent's engagement hereunder will be until the earlier of (i)     , 2024, and (ii) the Closing Date (such earlier date, the "**Termination Date**"); *provided, however*, the Placement Agent may terminate this Agreement prior to the Termination Date if it reasonably determines that it is unsatisfied with the results of its due diligence investigation, notwithstanding its best efforts to complete the Placement. The Company may terminate the engagement hereunder for any reason prior to the Termination Date. If this Agreement expires or terminates prior to the completion of the Placement, the Company shall reimburse expenses incurred by the Placement Agent, pursuant to Section 4 hereof but in no event greater than the amounts set forth in Section 4, up to and including the date of Termination. The Placement Agent may not use any confidential information concerning the Company provided by the Company for any purposes other than those contemplated under this Agreement.

**Section 8. Placement Agent Information.** The Company agrees that any information or advice rendered by the Placement Agent in connection with this engagement is for the confidential use of the Company only in their evaluation of the Placement and, except as otherwise required by law, the Company will not disclose or otherwise refer to the advice or information in any manner without the Placement Agent's prior written consent.

**Section 9. No Fiduciary Relationship.** This Agreement does not create, and shall not be construed as creating rights enforceable by any person or entity not a party hereto, except those entitled hereto by virtue of the indemnification provisions hereof. The Company acknowledges and agrees that the Placement Agent is not and shall not be construed as a fiduciary of the Company and shall have no duties or liabilities to the equity holders or the creditors of the Company or any other person by virtue of this Agreement or the retention of the Placement Agent hereunder, all of which are hereby expressly waived.

**Section 10. Closing.** The obligations of the Placement Agent, and the closing of the sale of the Placement Securities hereunder are subject to the accuracy, when made and on the Closing Date, of the representations and warranties on the part of the Company contained herein and in the Purchase Agreement, to the performance by the Company of its obligations hereunder and in the Purchase Agreement, and to each of the following additional terms and conditions, except as otherwise disclosed to and acknowledged and waived by the Placement Agent:

(a) All corporate proceedings and other legal matters incident to the authorization, form, execution, delivery, and validity of each of this Agreement, the Placement Securities, and all other legal matters relating to this Agreement and the transactions contemplated hereby with respect to the Placement Securities have been completed or resolved in a manner reasonably satisfactory in all material respects to the Placement Agent.

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(b) The Placement Agent has received from outside legal counsel, including local counsel, if applicable, to the Company such counsel's written opinion and negative assurance letter with respect to the Placement Securities, addressed to the Placement Agent and dated as of the Closing Date, in form and substance reasonably satisfactory to the Placement Agent.

(c) The Placement Agent has received customary certificates of the Company's executive officers (the "**Officer's Certificate**") as to the accuracy of the representations and warranties contained in the Purchase Agreement, and a certificate of the Company's secretary (the "**Secretary's Certificate**") certifying (i) that the Company's organizational documents are true and complete, have not been modified and are in full force and effect; (ii) that the resolutions of the Company's Board of Directors relating to the Placement are in full force and effect and have not been modified; and (iii) as to the incumbency of the officers of the Company. Each of the Officer's Certificate and Secretary's Certificate must be dated as of the Closing Date, and all documents referenced in the Secretary's Certificate must be attached thereto.

(d) The Common Stock has been registered under the Exchange Act and listed, admitted and authorized for trading on the Trading Market or other applicable U.S. national exchange as of the Closing Date, and the Placement Agent has received reasonably satisfactory evidence of such actions. The Company has not taken any action designed to, 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 or other applicable U.S. national exchange. The Company has not received any information suggesting that the Commission or the Trading Market or other U.S. applicable national exchange is contemplating terminating such registration or listing.

(e) No action or proceeding before a court of competent jurisdiction has been taken, and no statute, rule, regulation, or order has been enacted, adopted or issued by any governmental agency or body that would, as of the Closing Date, prevent the issuance or sale of the Placement Securities or materially and adversely affect the business or operations of the Company. No injunction, restraining order, or order of any other nature by any federal or state court of competent jurisdiction has been issued as of the Closing Date that would prevent the issuance or sale of the Placement Securities or materially and adversely affect the business or operations of the Company.

(f) The Company has entered into a Purchase Agreement with each of the Purchasers of the Placement Securities, and such agreements are in full force and effect and contain representations, warranties and covenants of the Company as agreed upon between the Company and the Purchasers.

(g) FINRA raised no objections to the fairness and reasonableness of the terms and arrangements of this Agreement. If requested by the Placement Agent, the Company has filed, or has authorized the Placement Agent's counsel to file on the Company's behalf, with FINRA all necessary materials in compliance with FINRA Rule 5110 with respect to the Placement and has paid all filing fees required in connection therewith.

(h) The Placement Agent has received an executed Lock-Up Agreement from each of the Company's officers, directors prior to the Closing Date.

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(i) On or before the Closing Date, the Placement Agent and counsel for the Placement Agent 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 Placement Securities as contemplated herein, or in order to evidence the accuracy of any of the representations and warranties of the Company, or the satisfaction of any of the conditions or agreements, herein contained.

(j) On the date hereof, the Placement Agent shall have received, and the Company shall have caused to be delivered to the Placement Agent, letters from both 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, or business of the Company, 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 Placement of the Securities.

(k) The Placement Agent shall have received from the Company a certificate by the Chief Financial Officer of the Company, dated as of such date, in form and substance reasonably satisfactory to the Placement Agent.

If any of the conditions specified in this Section 9 have not been fulfilled when and as required by this Agreement, the Placement Agent may terminate this Agreement at any time on or prior to the Closing Date by giving oral or written notice to the Company. Any such oral notice must be promptly confirmed in writing.

**Section 11. Governing Law.** This Agreement will be governed by, and construed in accordance with, the laws of the State of New York applicable to agreements made and to be performed entirely in such State. This Agreement may not be assigned by either party hereto without the prior written consent of the other party. This Agreement is binding upon, and inure to the benefit of, the parties and their respective successors and permitted assigns. Any right to trial by jury with respect to any dispute arising under this Agreement or any transaction or conduct in connection herewith is waived. Any dispute arising under this Agreement may be brought into the courts of the State of New York or into the federal court located in New York, New York, and, by execution and delivery of this Agreement, the Company hereby accepts for itself and in respect of its property, generally and unconditionally, the jurisdiction of aforesaid courts. Each party hereto irrevocably waives personal service of process, consents to process being served in any such suit, action, or proceeding by delivering a copy thereof via overnight delivery (with evidence of delivery) to such party at the address in effect for notices to it under this Agreement, and acknowledges that such service will constitute good and sufficient service of process and notice thereof. If either party commences an action or proceeding to enforce any provisions of this Agreement, then the non-prevailing party in such action or proceeding shall reimburse the prevailing party for its attorney's fees and other costs and expenses incurred in connection with such action or proceeding.

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**Section 12. Entire Agreement/Miscellaneous.** This Agreement embodies the entire agreement and understanding between the parties hereto, and supersedes all prior agreements and understandings, relating to the subject matter hereof. If any provision of this Agreement is determined to be invalid or unenforceable in any respect, such determination will not affect such provision in any other respect or any other provision of this Agreement, which will remain in full force and effect. This Agreement may not be amended or

otherwise modified or waived except by an instrument in writing signed by both the Placement Agent and the Company. The representations, warranties, agreements, and covenants contained herein shall survive the Closing Date of the Placement and delivery of the Placement Securities. This Agreement may be executed in two or more counterparts, all of which, when taken together, will be considered one and the same agreement. This Agreement will become effective when each party hereto has received a counterpart hereof signed by the other party. In the event that any signature is delivered by facsimile transmission or a .pdf format file, such signature will 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 facsimile or .pdf signature page were an original thereof.

**Section 13. Notices.** Any and all notices or other communications or deliveries required or permitted to be provided hereunder must be in writing and will be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is sent to the email address specified on the signature pages attached hereto prior to 6:30 p.m. (New York City time) on a Business Day, (ii) the next Business Day after the date of transmission, if such notice or communication is sent to the email address on the signature pages attached hereto on a day that is not a Business Day or later than 6:30 p.m. (New York City time) on any Business Day, (iii) the third business day following the date of mailing, if sent by U.S. internationally recognized air courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications are as set forth on the signature pages hereto.

**Section 14. Press Announcements.** The Company agrees that the Placement Agent may, on and after the Closing Date, reference the Placement and the Placement Agent's role in connection therewith in the Placement Agent's marketing materials and on its website and to place advertisements in financial and other newspapers and journals, in each case at its own expense.

*[The remainder of this page has been intentionally left blank.]*

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Please confirm that the foregoing correctly sets forth our agreement by signing and returning to the Placement Agent the enclosed copy of this Agreement.

Very truly yours,

**WALLACHBETH CAPITAL LLC**

By: \_\_\_\_\_  
Name: Eric Schweitzer  
Title: Chief Compliance Officer

Address for notice:

Harborside Financial Center Plaza 5  
185 Hudson Street, Suite 1410  
Jersey City, NJ 07311

Attn: Douglas Bantum  
Email: dbantum@wallachbeth.com

*[Signature Page to the Placement Agency Agreement]*

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Accepted and Agreed to as of the date first written above:

**LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

By: \_\_\_\_\_  
Name: Bastiaan van der Baan  
Title: Chief Executive Officer

Address for notice:

248 Route 25A, No. 2  
East Setauket, NY, 11733  
Attn: Chief Executive Officer  
Email: bvanderbaan@lixte.com

*[Signature Page to the Placement Agency Agreement]*

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## SECURITIES PURCHASE AGREEMENT

THIS SECURITIES PURCHASE AGREEMENT (this “Agreement”) is entered into and made effective as of [ ], 2024, between Lixte Biotechnology Holdings, 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”).

### RECITALS

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.

### 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(k).

“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.

“Agreement” shall have the meaning ascribed to such term in the Preamble.

“Applicable Laws” shall have the meaning ascribed to such term in Section 3.1(pp).

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

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

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

“BSA/PATRIOT Act” shall have the meaning ascribed to such term in Section 3.2(e).

“Business Day” means any day except Saturday, Sunday, any day which is a federal legal holiday in the United States, or any day on which banking institutions in the State of New York are authorized or required by law or other governmental action to close.

“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 Purchaser’s 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 (1st) Trading Day following the date hereof (or the second (2<sup>nd</sup>) Trading Day following the date hereof if this 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).

“Code” means the United States Internal Revenue Code of 1986, as amended.

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

“Common Stock” means the common stock of the Company, par value \$0.0001 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 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 Warrant Shares” means the shares of Common Stock issuable upon exercise of the Common Warrants.

“Common Warrants” means, collectively, the Common Stock purchase warrants delivered to each Purchaser at the Closing in accordance with Section 2.2(a) hereof, which warrants shall be, in the form of Exhibit A attached hereto.

“Company” shall have the meaning ascribed to such term in the Preamble.

“Company Counsel” means TroyGould PC, with offices located at 1801 Century Park East, 16<sup>th</sup> Floor, Los Angeles, CA 90067.

“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.

“DVP” shall have the meaning ascribed to such term in [Section 2.1](#).

“DWAC” shall have the meaning ascribed to such term in [Section 2.2\(a\)\(iv\)](#).

“EDGAR” means the Electronic Data Gathering, Analysis, and Retrieval System.

“ERISA” shall have the meaning ascribed to such term in [Section 3.2\(g\)](#).

“Environmental Law” shall have the meaning ascribed to such term in [Section 3.1\(n\)](#).

“Evaluation Date” shall have the meaning ascribed to such term in [Section 3.1\(t\)](#).

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

“Exempt Issuance” means the issuance of (i) shares of Common Stock, restricted stock units, or options, including the shares of Common Stock underlying the restricted stock units or options, to consultants, employees, officers, directors, or consultants of the Company pursuant to any stock or option plan or arrangement 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, (ii) securities upon the exercise or exchange of or conversion of any Securities issued hereunder 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 anti-dilution provisions contained therein as disclosed in the SEC Reports and the Prospectus) or to extend the term of such securities, (iii) securities issued pursuant to merger, acquisition, 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, further* that any such issuance shall only be to a Person that (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 in which the Company receives benefits in addition to any 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 (iv) securities for settlement of outstanding payables or liabilities *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.

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

“Federal Reserve” shall have the meaning ascribed to such term in [Section 3.1\(nn\)](#).

“Hazardous Materials” shall have the meaning ascribed to such term in [Section 3.1\(n\)](#).

“Indebtedness” shall have the meaning ascribed to such term in [Section 3.1\(bb\)](#).

“Intellectual Property” shall have the meaning ascribed to such term in [Section 3.1\(q\)](#).

“Issuer Free Writing Prospectus” shall have the meaning ascribed to such term in [Section 3.1\(f\)\(ii\)](#).

“IT Systems and Data” shall have the meaning ascribed to such term in [Section 3.1\(kk\)](#).

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

“Lock-Up Agreements” means the lock-up agreements, dated as of the date hereof and executed by each executive officer and director of the Company (based in shares outstanding prior to the issuance of Securities in the Offering), in the form of [Exhibit C](#) attached hereto.

“Material Adverse Effect” shall have the meaning ascribed to such term in [Section 3.1\(b\)](#).

“Material Permits” shall have the meaning ascribed to such term in [Section 3.1\(p\)](#).

“Money Laundering Laws” shall have the meaning ascribed to such term in [Section 3.1\(oo\)](#).

“Non-cooperative Jurisdiction” shall have the meaning ascribed to such term in [Section 3.2\(f\)](#).

“OFAC” shall have the meaning ascribed to such term in [Section 3.1\(ll\)](#).

“Offering” means the offering of the Securities hereunder.

“Per Unit 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 and before the Closing Date; *provided* that the purchase price per Pre-Funded Warrant shall be the Per Unit Purchase Price minus \$0.001.

“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.

“Placement Agent” means WallachBeth Capital LLC.

“Placement Agent Warrants” means the shares of Common Stock issuable upon the exercise of warrants granted to the Placement Agent.

“Placement Agent Warrant Shares” means the shares of Common Stock issuable upon exercise of the Placement Agent Warrants.

“Placement Agency Agreement” means that certain Placement Agency Agreement by and between the Company and the Placement Agent, dated as of the date hereof.

“Preliminary Prospectus” means the preliminary prospectus included in the Registration Statement at the time the Registration Statement is declared effective.

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

“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, in substantially the form of Exhibit B attached hereto.

“Pre-Settlement Period” shall have the meaning ascribed to such term in Section 2.1.

“Pre-Settlement Securities” shall have the meaning ascribed to such term in Section 2.1.

“Proceeding” means an action, claim, suit, investigation, or proceeding (including, without limitation, an informal investigation or partial proceeding, such as a deposition) pending or, to the Company’s knowledge, threatened in writing against or affecting the Company or any of its respective properties before or by any court, arbitrator, governmental, or administrative agency or regulatory authority (federal, state, county, local, or foreign).

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

“Purchaser” shall have the meaning ascribed to such term in the Preamble.

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

“Registration Statement” the Company’s registration statement on Form S-1 (File No. 333- 282781).

“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.

“Sanctioned Person” shall have the meaning ascribed to such term in Section 3.2(e).

“Sanctions” shall have the meaning ascribed to such term in Section 3.2(e).

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

“Securities” means the Shares, the Warrants, the Pre-Funded Warrants, the Pre-Funded Warrant Shares 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.

“Shell Bank” shall have the meaning ascribed to such term in Section 3.2(e).

“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 the Shares or Pre-Funded Warrants (in lieu of Shares) and Common 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).

“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 Pre-Funded Warrants, the Common Warrants, the Lock-Up Agreements, and the Placement Agency Agreement, including 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.

“U.S. GAAP” means generally accepted accounting principles in the United States.

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

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

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

2.1 Closing. On the Closing Date, upon the terms and subject to the conditions set forth herein, the Company agrees to sell, and the Purchasers, severally and not jointly, agree to purchase, the Units, each consisting of either one share of Common Stock or one Pre-Funded Warrant, along with one and one-quarter (1.25) Common Warrants, subscribed for by such Purchaser. Notwithstanding anything herein to the contrary, to the extent that a Purchaser determines, in its sole discretion, that such Purchaser's Subscription Amount (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 cause such Purchaser's beneficial ownership of the shares of Common Stock to exceed the Beneficial Ownership Limitation, or as such Purchaser may otherwise choose, such Purchaser may elect to purchase Pre-Funded Warrants in lieu of the Shares as determined pursuant to Section 2.2(a). The "Beneficial Ownership Limitation" shall be 4.99% (or, with respect to each Purchaser, 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 Shares on the Closing Date. In each case, the election to receive Pre-Funded Warrants is solely at the option of the Purchaser. 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" ("DVP") settlement with the Company or its designee. 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 occur remotely via the exchange of documents and signatures or such other location as the parties shall mutually agree. Unless otherwise directed by the Placement Agent, settlement of the Shares shall occur via 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 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 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 Pre-Funded 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, *provided* that payment of the aggregate Exercise Price (as defined in the Pre-Funded Warrants) (other than in the case of a cashless exercise) is received by such Warrant Share Delivery Date. Unless otherwise directed by the Placement Agent, as soon as reasonably practicable after the Closing Date, the Warrants shall be issued to each Purchaser in originally signed form.

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## 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, in form and substance reasonably satisfactory to the Placement Agent, directed to the Placement Agent and the Purchasers;
- (iii) a negative assurance letter of Company Counsel, addressed to the Placement Agent, in form and substance reasonably satisfactory to the Placement Agent;
- (iv) the Company's wire instructions, on Company letterhead and executed by the Chief Executive Officer or Chief Financial Officer;
- (v) subject to the penultimate sentence of 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 each Purchaser's Subscription Amount divided by the Per Unit 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;
- (vi) if applicable, for each Purchaser of Pre-Funded Warrants pursuant to Section 2.1, a signed 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 Warrants divided by the Per Unit Purchase Price minus \$0.001, with an exercise price equal to \$0.001, subject to adjustment therein;
- (vii) a signed Common Warrant registered in the name of each Purchaser to purchase up to a number of shares of Common Stock equal to 4.99% of the Purchaser's Shares, with an exercise price equal to \$[ ], subject to adjustment therein;

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- (viii) Lock-Up Agreements executed by each executive officer, director, and five percent (5%) stockholder of the Company;
- (ix) an Officer's Certificate, in form and substance reasonably satisfactory to the Placement Agent;
- (x) a Secretary's Certificate, in form and substance reasonably satisfactory to the Placement Agent; and
- (xi) the Preliminary Prospectus and the 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 (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), which shall be made available for DVP settlement with the Company or its designees.

## 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 such representation or warranty is 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 such representation or warranty is 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);

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

(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 (excluding volatility) 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.

### ARTICLE III. REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. Except as set forth in the SEC Reports, the Company hereby makes the following representations and warranties to each Purchaser:

(a) *Subsidiaries*. The Company has one wholly-owned Delaware subsidiary, Lixte Biotechnology, Inc.

(b) *Organization and Qualification*. The Company 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. The Company is not in violation nor default of any of the provisions of its respective certificate or articles of incorporation, bylaws, or other organizational or charter documents. The Company 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, would not have resulted in 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, 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"); *provided* that a change in the market price or trading volume of the Common Stock alone shall not be deemed, in" and of itself, to constitute a Material Adverse Effect. 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.

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(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 the Company 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.

(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 certificate of incorporation, bylaws, 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 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 debt or otherwise) or other understanding to which the Company is a party or by which any property or asset of the Company 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 is subject (including federal and state securities laws and regulations), or by which any property or asset of the Company is bound or affected; except in the case of each of clauses (ii) and (iii), such as would not, individually or in the aggregate, 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 (including state blue sky law), 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 the Warrant Shares for trading thereon in the time and manner required thereby, and (iv) filings required by the Financial Industry Regulatory (collectively, the "Required Approvals").

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(i) The Shares are duly authorized and, when issued and paid for in accordance with this Agreement, will be duly and validly issued, fully paid, and nonassessable, free and clear of all Liens imposed by the Company other than restrictions on transfer provided for in the Transaction Documents and shall not be subject to preemptive or similar rights of stockholders. The Warrants when paid for and issued in accordance with this Agreement, will constitute valid and binding obligations of the Company, enforceable against the Company in accordance with their respective terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, or similar laws affecting the rights of creditors generally and subject to general principles of equity. 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 other than restrictions on transfer provided for in the Transaction Documents and shall not be subject to preemptive or similar rights of stockholders. 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 (without taking into account any limitations on the exercise of the Warrants set forth therein).

(ii) The Company has prepared and filed the Registration Statement in conformity with the requirements of the Securities Act, which became effective on [ ], 2024, 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 the 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 shall file the Preliminary Prospectus or the Prospectus with the Commission pursuant to Rule 424(b). At the time the Registration Statement and any amendments thereto became effective as determined under the Securities Act, 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 Prospectus and any amendments or supplements thereto, at the time the Preliminary Prospectus, 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 light of the circumstances under which they were made, not misleading.

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Any “issuer free writing prospectus” (as defined in Rule 433 under the Securities Act) relating to the Securities is hereafter referred to as an Issuer Free Writing Prospectus. Any reference herein to the Preliminary Prospectus and the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein as of the date of filing thereof; and any reference herein to any “amendment” or “supplement” with respect to any of the Preliminary Prospectus and the Prospectus shall be deemed to refer to and include (i) the filing of any document with the Commission incorporated or deemed to be incorporated therein by reference after the date of filing of such Preliminary Prospectus or Prospectus and (ii) any such document so filed.

All references in this Agreement to the Registration Statement, the Preliminary Prospectus, the Prospectus, or any Issuer Free Writing Prospectus, or any amendments or supplements to any of the foregoing, shall be deemed to include any copy thereof filed with the Commission on EDGAR.

(iii) The Registration Statement complies, and the Prospectus and any further amendments or supplements to the Registration Statement or the Prospectus will comply, in all material respects, with the applicable provisions of the Securities Act, and do not, and will not, as of the applicable effective date as to each part of the Registration Statement and as of the applicable filing date as to the Prospectus and any amendment thereof or supplement thereto, contain an 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.

(iv) No order preventing or suspending the use of the Prospectus has been issued by the Commission.

(g) *Capitalization.* The equity capitalization of the Company is as set forth in the Registration Statement and the SEC Reports as of the dates indicated therein. 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 or vesting and settlement of restricted stock units under the Company’s equity incentive 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. All of the issued and outstanding shares of Common Stock are fully paid and non-assessable and have been duly and validly authorized and issued, in compliance with all federal and state securities laws and not in violation of or subject to any preemptive or similar right that entitles any Person to acquire from the Company any shares of Common Stock or other security of the Company or any security convertible into, or exercisable or exchangeable for, shares of Common Stock or any other such security, except for such rights as may have been fully satisfied or waived prior to the date hereof. The Company has 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 contracts, commitments, understandings, or arrangements by which the Company is or may become bound to issue additional shares of Common Stock or Common Stock Equivalents. Except as set forth on Schedule 3.1(g), no Person has any right of first refusal, pre-emptive right, right of participation, or any similar right to participate in the transactions contemplated by the Transaction Documents. The issuance and sale of the Securities will not obligate the Company to issue shares of Common Stock or other securities to any Person (other than the Purchasers) and will not result in a right of any holder of Company securities to adjust the exercise, conversion, exchange, or reset price under any of such securities. There are no outstanding securities or instruments of the Company 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. There are no outstanding securities or instruments of the Company that contain any redemption or similar provisions, and there are no contracts, commitments, understandings, or arrangements by which the Company is or may become bound to redeem a security of the Company. The Company does not have any stock appreciation rights or “phantom stock” plans or agreements or any similar plan or agreement. Except for the Required Approvals, no further approval or authorization of any stockholder of the Company, 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) *Reports.* The Company has filed all reports, schedules, forms, statements, and other documents required to be filed by the Company under the Securities Act and Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, for the two (2) 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 Preliminary Prospectus and the Prospectus, being collectively referred to herein as the “SEC Reports”) on a timely basis or has received a valid extension (or waiver from the Commission) 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 light of the circumstances under which they were made, not misleading.

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(i) *Financial Statements.* The consolidated financial statements of the Company, including the notes thereto, included or incorporated by reference in the Registration Statement and Prospectus 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 accounting principles generally accepted in the United States (“U.S. GAAP”) applied on a consistent basis during the periods involved, 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 U.S. GAAP, and fairly present in all material respects the financial position of the Company 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.

(j) *Material Changes; Undisclosed Events, Liabilities or Developments.* Since the date of the latest consolidated financial statements included or incorporated by reference into the Registration Statement and the Prospectus, (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 U.S. 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 equity compensation plans, or in connection with the prior offerings of the Company's securities in which certain officers, directors and Affiliates have participated. 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, 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 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 one (1) Trading Day prior to the date that this representation is made.

(k) *Litigation.* Except as set forth in the SEC Reports, there is no action, suit, inquiry, notice of violation, Proceeding, or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, or any of its properties before or by any court, arbitrator, governmental, or administrative agency or regulatory authority (federal, state, county, local, or foreign) (collectively, an "Action") which, if there were an unfavorable decision, would individually or in the aggregate, have resulted in or reasonably be expected to result in a Material Adverse Effect. None of the Actions set forth in the SEC Reports, adversely affects or challenges the legality, validity, or enforceability of any of the Transaction Documents or the Securities. Neither the Company 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 under the Exchange Act or the Securities Act.

(l) *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 employees is a member of a union that relates to such employee's relationship with the Company, and the Company is not a party to a collective bargaining agreement, and the Company believes that its relationship with their employees are good. To the knowledge of the Company, no executive officer of the Company, 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 to any liability with respect to any of the foregoing matters. The Company is in compliance with all applicable 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.

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(m) *Compliance.* The Company: (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 under), nor has the Company 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.

(n) *Environmental Law.* To the knowledge of the Company, the Company (i) is in compliance with all applicable 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) has received all permits licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses; and (iii) is 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 would be reasonably expected to have, individually or in the aggregate, a Material Adverse Effect.

(o) *Title to Assets.* The Company does not own any real estate. The Company has good and marketable title in all personal property owned by them that is material to the business of the Company, 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 (ii) Liens for the payment of federal, state, or other taxes, for which appropriate reserves have been made therefor in accordance with U.S. GAAP and, the payment of which is neither delinquent nor subject to penalties. Any real property and facilities held under lease by the Company are held by them under valid, subsisting, and enforceable leases with which the Company is in compliance, except where the failure to be in compliance would not reasonably be expected to have a Material Adverse Effect.

(p) *Regulatory Permits.* The Company possesses 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 the Company has not received any notice of proceedings relating to the revocation or modification of any Material Permit.

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(q) *Intellectual Property.* The Company to its knowledge own, possess, or can acquire on reasonable terms, all Intellectual Property (as defined below) necessary for the conduct of the Company's business as now conducted or as described in the SEC Reports to be conducted, and there are no unreleased liens or security interests which have been filed against any of the patents owned by the Company. Furthermore, (i) to the knowledge of the Company, there is no infringement, misappropriation, or violation by third parties of any such Intellectual Property; (ii) there is no pending or, to the knowledge of the Company, threatened, action, suit, Proceeding, or other claim by others challenging the Company's rights in or to any such Intellectual Property, and the Company is unaware of any facts which would form a reasonable basis for any such claim; (iii) the Intellectual Property owned by the Company, and to the knowledge of the Company, the Intellectual Property licensed to the Company, has not been adjudged invalid or unenforceable, in whole or in part, and there is no pending or, to the knowledge of the Company, threatened action, suit, Proceeding, or other claim by others challenging the validity or scope of any such Intellectual Property, and the Company is not aware of any facts which would form a reasonable basis for any such claim; (iv) there is no pending or, to the knowledge of the Company, threatened action, suit, Proceeding, or other claim by others that the Company infringes, misappropriates, or otherwise violates any Intellectual Property or other proprietary rights of others, the Company has not received any written notice of such claim and the Company is unaware of any other fact which would form a reasonable basis for any such claim; (v) the Company has complied with the material terms of each agreement

pursuant to which Intellectual Property has been licensed to the Company, and all such agreements are in full force and effect; and (vi) any product candidates described in the SEC Reports as under development by the Company fall within the scope of the claims of one or more patents or applications relating to the product candidate or its intended use owned by, or exclusively licensed to, the Company; and (vii) to the Company's knowledge, no employee of the Company is in or has ever been in violation of any term of any employment contract, patent disclosure agreement, invention assignment agreement, non-competition agreement, non-solicitation agreement, nondisclosure agreement, or any restrictive covenant to or with a former employer where the basis of such violation relates to such employee's employment with the Company or actions undertaken by the employee while employed with the Company, except, in the case of clause (vii), as would not reasonably be expected to have a Material Adverse Effect. "Intellectual Property" shall mean all patents, patent applications, trade and service marks, trade and service mark registrations, trade names, copyrights, licenses, inventions, trade secrets, domain names, technology, know-how, and other intellectual property.

(r) *Insurance.* The Company is 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 are engaged, including, but not limited to, directors and officers insurance coverage at least equal to the aggregate Subscription Amount. The Company has no 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.

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(s) *Transactions With Affiliates and Employees.* Except as set forth in the SEC Reports, none of the executive officers or directors of the Company and, to the knowledge of the Company, none of the employees of the Company is presently a party to any transaction with the Company (other than for services as employees, executive 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 executive officer, director, or such employee or, to the knowledge of the Company, any entity in which any executive 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 One Hundred Twenty Thousand Dollars (\$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.

(t) *Sarbanes-Oxley; Internal Accounting Controls.* Except as provided in the SEC Reports, the Company is in compliance in all material respects with the applicable provisions of the Sarbanes-Oxley Act of 2002, as amended. Except as provided in the SEC Reports, the Company maintains a system of internal accounting controls sufficient to provide reasonable assurances 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 applicable securities laws and U.S. GAAP and to maintain asset accountability for assets, (iii) access to assets is permitted only in accordance with management's general or specific authorization, and (iv) the recorded accounting for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Except as provided in the SEC Reports, the Company has established disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the Company 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 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 or the Subsidiaries that have materially affected, or is reasonably likely to materially affect, the internal control over financial reporting of the Company.

(u) *Certain Fees.* Except for fees payable to the Placement Agent, no brokerage or finder's fees or commissions are or will be payable by the Company 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 3.1\(u\)](#) that may be due in connection with the transactions contemplated by the Transaction Documents.

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(v) *Investment Company.* The Company is not, and immediately after receipt of payment for the Securities, will not be an "investment company" within the meaning of the Investment Company Act of 1940, as amended. As long as the Warrants remain outstanding, the Company shall use its reasonable best efforts to 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.

(w) *Registration Rights.* Other than to each of the Purchasers pursuant to this Agreement, no Person has any right to cause the Company to effect the registration under the Securities Act of any securities of the Company.

(x) *Listing and Maintenance Requirements.* The Common Stock is registered pursuant to Section 12(b) 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. The Company has not received any notice from the Commission that it is contemplating terminating such registration. Except as set forth in the SEC Reports, the Company has not, in the twelve (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 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.

(y) *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 jurisdiction 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.

(z) *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, its businesses and the transactions contemplated hereby, including pursuant to the SEC Reports and 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 light of the circumstances under which they were made, not misleading. The press releases disseminated by the Company during the twelve (12) 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 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.

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(aa) *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.

(bb) *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 (1) year from the Closing Date. The Company is not in default with respect to any Indebtedness. For the purposes of this Agreement, "Indebtedness" means (x) any liabilities for borrowed money or amounts owed in excess of Fifty Thousand Dollars (\$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 One Hundred Thousand Dollars (\$100,000) due under leases required to be capitalized in accordance with U.S. GAAP.

(cc) *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 (i) has made or filed all United States federal, state, and local income and all foreign 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 know of no basis for any such claim.

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(dd) *Foreign Corrupt Practices; Criminal Acts.* None of the Company, any director or officer thereof or, to the knowledge of the Company, any agent, employee, affiliate, or other Person acting on behalf of the Company is aware of or has taken any action, directly or indirectly, that would result in a violation by such Persons of the FCPA or any applicable anti-corruption laws, rules, or regulation of the U.S. or any other jurisdiction in which the Company conducts business, including, without limitation, making use of the mails or any means or instrumentality of interstate commerce corruptly in furtherance of an offer, payment, promise to pay, or authorization of the payment of any money, or other property, gift, promise to give, or authorization of the giving of anything of value to any "foreign official" (as such term is defined in the FCPA) or any foreign political party or official thereof or any candidate for foreign political office, in contravention of the FCPA, and the Company, and, to the knowledge of the Company, the Affiliates of the Company have conducted their businesses in compliance with the FCPA and have instituted and maintain policies and procedures designed to ensure, and which are reasonably expected to continue to ensure, continued compliance therewith. The Company has not engaged in, or will engage in, (i) any direct or indirect dealings or transactions in violation of U.S. federal or state criminal laws, including, without limitation, the Controlled Substances Act, the Racketeer Influenced and Corrupt Organizations Act, the Travel Act or any anti-money laundering statute, or (ii) any "aiding and abetting" in any violation of U.S. federal or state criminal laws.

(ee) *Accountants.* The Company's independent registered public accounting firm is as set forth in the Prospectus. To the knowledge and belief of the Company, such accounting firm is a registered public accounting firm as required by the Exchange Act.

(ff) *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.

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(gg) *Acknowledgment Regarding Purchaser's Trading Activity.* Anything in this Agreement or elsewhere herein to the contrary notwithstanding (except for Sections 3.2(f) and 4.14 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 (in compliance with applicable laws) at various times during the period that the Securities are outstanding, 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.

(hh) *Regulation M Compliance.* The Company has not, and to its knowledge no one acting on its behalf (other than the Placement Agent, as to which no representation is made) 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.

(ii) *Stock Option Plans.* Each stock option granted by the Company under the Company's stock option plan, or as an inducement grant outside of a stock option plan, was granted (i) in accordance with the terms of the Company's stock option plan or under its terms, respectively, 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 U.S. 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 financial results or prospects.

(jj) *Clinical and Preclinical Studies.* The studies, tests and preclinical and clinical trials conducted by or, to the Company's knowledge, on behalf of the Company were and, if still ongoing, are being conducted in all material respects in accordance with the applicable protocols, procedures and controls pursuant to accepted

professional scientific standards and all authorizations and applicable laws and the rules and regulations promulgated thereunder and any applicable laws, rules, and regulations of the jurisdiction in which such trials and studies are being conducted; the descriptions of the results of such studies, tests and trials contained in the Registration Statement, the Prospectus or the Prospectus Supplement are, to the Company's knowledge, accurate and complete in all material respects and fairly present the data derived from such studies, tests and trials; except to the extent disclosed in the Registration Statement, the Prospectus or the Prospectus Supplement, the Company is not aware of any studies, tests or trials, the results of which the Company believes reasonably call into question the study, test, or trial results described or referred to in the Registration Statement, the Prospectus or the Prospectus Supplement when viewed in the context in which such results are described and the clinical state of development; and, except to the extent disclosed in the Registration Statement, the Prospectus or the Prospectus Supplement, the Company has not received any written notices or correspondence from the US Food and Drug Administration or any governmental entity requiring the termination or suspension of any studies, tests or preclinical or clinical trials conducted by or on behalf of the Company.

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(kk) *Cybersecurity*. Except as would not, individually or in the aggregate, reasonably be expected to have a Material Adverse Effect, (i)(x) to the Company's knowledge there has been no security breach or other compromise of or relating to any of the Company'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 has 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 that would require notification to any third party, including any governmental or regulatory authority, under applicable law; (ii) the Company is 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 has 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 has implemented backup and disaster recovery technology consistent with commercially reasonable industry standards and practices.

(ll) *Office of Foreign Assets Control*. Neither the Company nor, to the Company's knowledge, any director, officer, agent, employee, or affiliate of the Company 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 United States real property holding corporation within the meaning of Section 897 of the Code, and the Company shall so certify upon Purchaser's request.

(nn) *Bank Holding Company Act*. The Company is not 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"). The Company does not own or control, directly or indirectly, five percent (5%) or more of the outstanding shares of any class of voting securities or twenty-five percent (25%) 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. The Company does not exercise 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 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 with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened.

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(pp) *Regulatory*. Except as described in the Registration Statement, the Preliminary Prospectus and the Prospectus, as applicable, the Company (i) is and at all times have been in material compliance with all statutes, rules, and regulations applicable to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, advertising, labeling, promotion, sale, offer for sale, storage, import, export, or disposal of any product manufactured or distributed by the Company including, without limitation the Federal Food, Drug and Cosmetic Act (21 U.S.C. § 301 et seq.), the federal Anti-Kickback Statute (42 U.S.C. § 1320a-7b(b)), the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and the Patient Protection and Affordable Care Act of 2010, as amended by the Health Care and Education Affordability Reconciliation Act of 2010, the regulations promulgated pursuant to such laws, and any successor government programs and comparable state laws, regulations relating to Good Clinical Practices and Good Laboratory Practices and all other local, state, federal, national, supranational, and foreign laws, manual provisions, policies, and administrative guidance relating to the regulation of the Company (collectively, the "Applicable Laws"); (ii) has not received any notice from any court or arbitrator or governmental or regulatory authority or third party alleging or asserting noncompliance with any Applicable Laws or any licenses, exemptions, certificates, approvals, clearances, authorizations, permits, registrations, and supplements or amendments thereto required by any such Applicable Laws ("Authorizations"); (iii) possesses all material Authorizations and such Authorizations are valid and in full force and effect and are not in violation of any term of any such Authorizations; (iv) has not received written notice of any claim, action, suit, proceeding, hearing, enforcement, investigation arbitration, or other action from any court or arbitrator or governmental or regulatory authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations nor is any such claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration, or other action threatened; (v) has not received any written notice that any court or arbitrator or governmental or regulatory authority has taken, is taking or intends to take, action to limit, suspend, materially modify, or revoke any Authorizations nor is any such limitation, suspension, modification, or revocation threatened; (vi) has filed, obtained, maintained, or submitted all material reports, documents, forms, notices, applications, records, claims, submissions, and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions, and supplements or amendments were complete and accurate on the date filed (or were corrected or supplemented by a subsequent submission); and (vii) is not a party to any corporate integrity agreements, monitoring agreements, consent decrees, settlement orders, or similar agreements with or imposed by any governmental or regulatory authority.

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 or thereof, 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.

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(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 or otherwise in compliance with applicable federal and state securities laws).

(c) *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.

(d) *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.

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(e) *Sanctioned Persons; BSA/PATRIOT Act.* Purchaser is not owned or controlled by or acting on behalf of (in connection with this Agreement), a Sanctioned Person. Purchaser is not an institution that accepts currency for deposit and that (i) has no physical presence in the jurisdiction in which it is incorporated or in which it is operating and (ii) is unaffiliated with a regulated financial group that is subject to consolidated supervision (a "Shell Bank") or providing banking services to a Shell Bank. Purchaser represents that if it is a financial institution subject to the Bank Secrecy Act (31 U.S.C. Section 5311 et seq.), as amended by the USA PATRIOT Act of 2001 and its implementing regulations (collectively, the "BSA/PATRIOT Act"), that Purchaser maintains policies and procedures reasonably designed to comply with applicable obligations under the BSA/PATRIOT Act. Purchaser also represents that, to the extent required by applicable law, it maintains, either directly or through the use of a third-party administrator, policies, and procedures reasonably designed for the screening of any investors in the Purchaser against Sanctions-related lists of blocked or restricted persons. Purchaser further represents and warrants that (A) the funds held by Purchaser and used to purchase the Securities were not directly or indirectly derived from or related to any activities that may contravene U.S. federal, state, or non-U.S. anti-money laundering, anti-corruption, or Sanctions laws and regulations or activities that may otherwise be deemed criminal and (B) any returns from the Purchaser's investment will not be used to finance any illegal activities. For purposes of this Agreement, "Sanctioned Person" means at any time any person or entity with whom dealings are restricted, prohibited, or sanctionable under any Sanctions (as defined below), including as a result of being: (I) listed on any Sanctions-related list of designated or blocked or restricted persons; (II) that is a national of, the government of, or any agency or instrumentality of the government of, or resident in, or organized under the laws of, a country or territory that is the target of comprehensive Sanctions from time to time (as of the date of this Agreement, Cuba, Iran, North Korea, Syria, and the Crimea region); or (III) a relationship of ownership, control, or agency with any of the foregoing. "Sanctions" means those trade, economic and financial sanctions laws, regulations, embargoes, and restrictive measures (in each case having the force of law) administered, enacted, or enforced from time to time by (1) the United States (including without limitation the U.S. Department of the Treasury, Office of Foreign Assets Control, the U.S. Department of State, and the U.S. Department of Commerce), (2) the European Union and enforced by its member states, (3) the United Nations, and (4) the United Kingdom.

(f) *Non-cooperative Jurisdiction.* Purchaser is not owned or controlled by or acting on behalf of (in connection with this Agreement), a person or entity resident in, or whose funds used to purchase the Securities are transferred from or through, a country, territory, or entity that (i) has been designated as non-cooperative with international anti-money laundering or counter terrorist financing principles or procedures by the United States or by an intergovernmental group or organization, such as the Financial Action Task Force, of which the United States is a member; (ii) is the subject of an advisory issued by the Financial Crimes Enforcement Network of the U.S. Department of the Treasury; or (iii) has been designated by the Secretary of the Treasury under Section 311 of the USA PATRIOT Act as warranting special measures due to money laundering concerns (any such country or territory, a "Non-cooperative Jurisdiction"), or an entity or individual that resides or has a place of business in, or is organized under the laws of, a Non-cooperative Jurisdiction.

(g) *ERISA.* If Purchaser is an employee benefit plan that is subject to Title I of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), a plan, an individual retirement account or other arrangement that is subject to section 4975 of the Code or an employee benefit plan that is a governmental plan (as defined in section 3(32) of ERISA), a church plan (as defined in section 3(33) of ERISA), a non-U.S. plan (as described in section 4(b)(4) of ERISA), or other plan that is not subject to the foregoing but may be subject to provisions under any other federal, state, local, non-U.S., or other laws or regulations that are similar to such provisions of ERISA or the Code, or an entity whose underlying assets are considered to include "plan assets" of any such plan, account or arrangement subject to the fiduciary or prohibited transaction provisions of ERISA or section 4975 of the Code, Purchaser represents and warrants that the acquisition and holding of the Securities will not result in a non-exempt prohibited transaction under ERISA or Section 4975 of the Code.

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(h) *Certain Transactions and Confidentiality.* Other than consummating the transactions contemplated hereunder, each 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 or "derivative" securities based on securities issued by the Company during the period commencing as of the time that such Purchaser first held discussions (written or oral) with the Company or any other Person representing the Company setting forth the material terms of the transactions contemplated hereunder and ending immediately prior to execution of 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 the borrowing of, arrangement to borrow, identification of the availability of, and/or securing of, securities of the Company in order for such Purchaser (or its broker or other financial representative) to effect Short Sales or similar transactions following the Closing Date. 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.

(i) *No Governmental Review.* Such Purchaser understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities, nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

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 Legends. The Shares, the Warrants, and the Warrant Shares shall be issued free of legends. If at any time following the date hereof the Registration Statement is not effective or is not otherwise available for the sale of the Shares, the Warrants, or 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 of the Shares, the Warrants, or 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 Shares, the Warrants, or the Warrant Shares in compliance with applicable federal and state securities laws). The Company shall use commercially reasonable efforts to keep a registration statement (including the Registration Statement) registering the issuance of the Warrant Shares effective during the term of the Warrants.

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4.2 Furnishing of Information; Public Information. Until the earliest of the time that (i) no Purchaser owns Securities or (ii) the Common Warrants have expired, the Company covenants to use its reasonable efforts to maintain the registration of the Common Stock under Section 12(b) or 12(g) of the Exchange Act and 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, except in the event that the Company consummates: (A) any transaction or series of related transactions as a result of which any Person (together with its Affiliates) acquires then outstanding securities of the Company representing more than fifty percent (50%) of the voting control of the Company; (B) a merger or reorganization of the Company with one or more other entities in which the Company is not the surviving entity; or (C) a sale of all or substantially all of the assets of the Company.

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 stockholder approval prior to the closing of such other transaction unless stockholder 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 respective officers, directors, employees, 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, or any of its officers, directors, agents, employees or Affiliates on the one hand, and any of the Purchasers or any of their Affiliates, including, without limitation, the Placement Agent, 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 or submission with or to the Commission or any regulatory agency or Trading Market, without the prior written consent of such Purchaser, except (i) as required by federal securities law in connection with the filing or submission of final Transaction Documents with or to the Commission and (ii) 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.

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4.5 Stockholder 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 pricing 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, or any of its 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, or any of its respective officers, directors, agents, employees or Affiliates, or a duty to the Company, or any of its officers, directors, agents, employees, or Affiliates 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, the Company shall simultaneously file such material non-public information on with the Commission pursuant to a Current Report on Form 8-K or shall issue a press release containing such material non-public information. 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. The Company shall use the net proceeds from the sale of the Securities hereunder for general corporate purposes, including working capital, operating expenses and capital expenditures, and shall not use such proceeds: (i) 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 or as disclosed in the Registration Statement), (ii) for the redemption of any Common Stock or Common Stock Equivalents, (iii) for the settlement of any outstanding litigation, or (iv) in violation of FCPA or OFAC regulations.

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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, stockholders, 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, stockholders, 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 (i) 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 (ii) 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), the Company will indemnify each Purchaser Party, to the fullest extent permitted by applicable law, from and against any and all losses, claims, damages, liabilities, costs (including, without limitation, reasonable attorneys' fees), and expenses, as incurred, arising out of or relating to (i) any untrue or alleged untrue statement of a material fact contained in such registration statement, any prospectus or any form of prospectus or in any amendment or supplement thereto or in any preliminary prospectus, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading, except to the extent, but only to the extent, that such untrue statements or omissions are based solely upon information regarding such Purchaser Party furnished in writing to the Company by such Purchaser Party expressly for use therein, or (ii) any violation or alleged violation by the Company of the Securities Act, the Exchange Act, or any state securities law, or any rule or regulation thereunder in connection therewith. 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 (x) the employment thereof has been specifically authorized by the Company in writing, (y) the Company has failed after a reasonable period of time to assume such defense and to employ counsel, or (z) 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 actual and documented fees and expenses of no more than one such separate counsel. The Company will not be liable to any Purchaser Party under this Agreement (1) for any settlement by a Purchaser Party effected without the Company's prior written consent, which shall not be unreasonably withheld or delayed; or (2) 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 provided, however, that if it is subsequently determined by a final, non-appealable judgment of a court of competent jurisdiction that such Purchaser Party was not entitled to receive such periodic payments, such Purchaser Party shall promptly (but in no event later than five (5) Business Days) return such payments to the Company. 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, if applicable.

4.10 Listing of Common Stock. The Company hereby agrees to use commercially reasonable efforts to maintain the listing 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 all of the Shares and the Warrant Shares on such Trading Market and promptly secure the listing of all of the Shares and the 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 the Warrant Shares, and will take such other action as is necessary to cause all of the Shares and the 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. Notwithstanding the foregoing, this Section 4.10 shall not apply in the event that the Company consummates: (i) any transaction or series of related transactions as a result of which any Person (together with its Affiliates) acquires then outstanding securities of the Company representing more than fifty percent (50%) of the voting control of the Company; (ii) a merger or reorganization of the Company with one or more other entities in which the Company is not the surviving entity; or (iii) a sale of all or substantially all of the assets of the Company.

4.11 Subsequent Equity Sales.

(a) From the date hereof until forty five (45) days after the Closing Date, the Company shall not (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 amendment or supplement thereto, other than filing the final Prospectus or a registration statement on Form S-8 in connection with any employee benefit plan.

(b) From the date hereof until twelve (12) months after the Closing Date, the Company shall be prohibited from effecting or entering into an agreement to effect any issuance by the Company of shares 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 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 (other than in connection with a stock split or stock dividend or similar event) or upon the occurrence of specified or contingent events directly or indirectly related to the business of the Company or the market for shares of 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. 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.

4.12 Equal Treatment of Purchasers. No consideration (including any modification of any Transaction Document) shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of the Transaction Documents unless the same consideration is also offered to all of the parties to such Transaction Documents. 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 Shares 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, or any of its 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.

4.14 Exercise Procedures. The form of Notice of Exercise included in the Warrants sets 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.

4.15 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 commercially reasonable efforts to seek specific performance of the terms of such Lock-Up Agreement.

## **ARTICLE V. MISCELLANEOUS**

5.1 Termination. This Agreement may be terminated with respect to 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 (5th) Trading Day following the date hereof; *provided, however*, that no such termination will affect the right of any party hereto to sue for any breach by any other party (or parties).

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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 hereto, 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.

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: (i) the time of transmission, if such notice or communication is delivered via facsimile at the facsimile number or 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, (ii) the next Trading Day after the time of transmission, if such notice or communication is delivered via facsimile at the facsimile number or 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, (iii) the second (2nd) 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. The address for such notices and communications shall be as set forth on the signature pages attached hereto. To the extent that any notice provided pursuant to any Transaction Document constitutes, or contains, material, non-public information regarding the Company, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K or by issuing a press release containing such material non-public information.

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 Securities 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 group of Purchasers), the consent of such disproportionately impacted Purchaser (or group of 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.

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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 and warranties of the Company in Section 3.1 and the representations and warranties of the Purchasers in Section 3.2. 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.

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 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, stockholders, partners, members, managers, 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 for the applicable statute of limitations.

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 facsimile transmission or 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 facsimile or ".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.

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 (if such shares were delivered to the applicable Purchaser) 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 Thompson Hine LLP. Thompson Hine LLP 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 liquidated damages or other amounts owing under the Transaction Documents is a continuing obligation of the Company and shall not terminate until all unpaid liquidated damages and other amounts have been paid notwithstanding the fact that the instrument or security pursuant to which such 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]*

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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.

**LIXTE BIOTECHNOLOGY HOLDINGS, INC.**

By: \_\_\_\_\_  
Name: Bastiaan van der Baan  
Title: Chief Executive Officer

Address for Notice:

680 East Colorado Boulevard, Suite 180  
Pasadena, CA 91101  
Attn: Bastiaan van der Baan  
Email: bvanderbaan@lixte.com

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

Sichenzia Ross Ference Carmel LLP  
1185 Avenue of the Americas, 31st Floor  
New York, NY 10036  
Attention: Jeffrey P. Wofford, Esq.  
Email: jwofford@srfc.law

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

[PURCHASER SIGNATURE PAGES TO LIXTE BIOTECHNOLOGY HOLDINGS, INC.  
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 Securities 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:

☐ 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 (or the second (2nd) Trading Day following the date of this Agreement if this 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) 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]

**EXHIBIT A**

**FORM OF COMMON WARRANT**

*(See attached.)*

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**EXHIBIT B**

**FORM OF PRE-FUNDED WARRANT**

*(See attached.)*

B-1

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**EXHIBIT C**

**FORM OF LOCK-UP AGREEMENT**

*(See attached.)*

C-1

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in this Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-282781) of our report dated March 19, 2024, which includes an explanatory paragraph regarding substantial doubt about Lixte Biotechnology Holdings, Inc.'s ability to continue as a going concern, relating to the consolidated financial statements of Lixte Biotechnology Holdings, Inc., appearing in the Annual Report on Form 10-K of Lixte Biotechnology Holdings, Inc. for the fiscal year ended December 31, 2023, filed with the Securities and Exchange Commission. We also consent to the reference to our firm under the caption "Experts" in in the Prospectus, which is part of this Registration Statement.

/s/ Weinberg & Company, P.A.  
Los Angeles, California  
November 1, 2024

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