As filed with the Securities and Exchange Commission November 22, 2023

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form S-1
REGISTRATION STATEMENT
Under
The Securities Act of 1933

PLUS THERAPEUTICS, INC.
(Exact name of Registrant as specified in its charter)

Delaware	**2834**	**33-0827593**
(State or other jurisdiction of incorporation or organization)	**(Primary Standard Industrial Classification Code Number)**	**(I.R.S. Employer Identification Number)**

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Approximate date of commencement of proposed sale to the public: From time to time after this registration statement becomes effective

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, 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	☐	Accelerated filer	☐
Non-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 the provisions of Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

Table of Contents

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

PRELIMINARY PROSPECTUS
(Subject to Completion, Dated November 22, 2023)

[ ] Shares of Common Stock

Up to [ ] Pre-Funded Warrants to Purchase Common Stock

We are offering [ ] shares of our common stock on a firm commitment basis.

Our common stock is listed on the Nasdaq Capital Market under the symbol "PSTV." The last reported sale price of our common stock on the Nasdaq Capital Market on November 21, 2023 was $1.83 per share. The final public offering price will be determined through negotiation between us and the underwriter; the recent market price used throughout this prospectus may not be indicative of the actual offering price.

We are also offering to each purchaser whose purchase of shares of our common stock in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the holder, 9.99%) of our outstanding shares of common stock immediately following the consummation of this offering, the opportunity to purchase, if the purchaser so chooses, pre-funded warrants to purchase shares of common stock, or the pre-funded warrants, in lieu of shares of common stock. Each pre-funded warrant will be exercisable for one share of our common stock. The purchase price of each pre-funded warrant will equal the price per share of common stock being sold to the public in this offering, minus $0.01, and the exercise price of each pre-funded warrant will be $0.01 per share. For each pre-funded warrant that we sell, the number of shares of our common stock that we are offering will be decreased on a one-for-one basis. The pre-funded warrants will not be listed on the Nasdaq Capital Market and are not expected to trade in any market, however we anticipate that the shares of our common stock to be issued upon exercise of the pre-funded warrants will trade on the Nasdaq Capital Market.

Investing in our securities involves a high degree of risk. These risks are described in the "Risk Factors" section on page 11 of this prospectus. You should also consider the risk factors described or referred to in any documents incorporated by reference in this prospectus, and in any applicable prospectus supplement, before investing in these 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 Share	Per Pre-Funded Warrant	Total
Public offering price	$	$	$
Underwriting discounts and commissions(1)	$	$	$
Proceeds to us, before expenses	$	$	$

(1) Underwriting discounts and commissions do not include a non-accountable expense allowance equal to 1.0% of the public offering price payable to the underwriter, the reimbursement of certain expenses of the underwriter we have agreed to pay and certain other compensation. We refer you to "*Underwriting*" beginning on page [●] for additional information regarding underwriter's compensation.

We have granted a 45-day option to the underwriter to purchase up to an additional [ ] shares of our common stock (and/or pre-funded warrants in lieu thereof), representing 15% of the shares of common stock and pre-funded warrants sold in the offering solely to cover over-allotments, if any.

The underwriter expects to deliver the shares on or about [ ], 2023.

The date of this prospectus is , 2023

TABLE OF CONTENTS

ABOUT THIS PROSPECTUS	ii
PROSPECTUS SUMMARY	1
THE OFFERING	9
FORWARD-LOOKING STATEMENTS	14
USE OF PROCEEDS	17
DILUTION	18
MARKET PRICE OF OUR COMMON STOCK AND RELATED STOCKHOLDER MATTERS	19
DESCRIPTION OF CAPITAL STOCK	20
UNDERWRITING	25
LEGAL MATTERS	31
EXPERTS	31
WHERE YOU CAN FIND MORE INFORMATION	31
INCORPORATION BY REFERENCE	32
DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES	33

ABOUT THIS PROSPECTUS

You should read this prospectus and the related exhibits filed with the Securities and Exchange Commission (the "SEC"), together with the additional information described under the headings "Where You Can Find More Information" and "Incorporation by Reference" before making your investment decision.

You should rely only on the information provided in this prospectus or in a prospectus supplement or any free writing prospectuses or amendments thereto. Neither we, nor the underwriters, have authorized anyone else to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. You should assume that the information in this prospectus is accurate only as of the date hereof. Our business, financial condition, results of operations and prospects may have changed since that date.

Neither we, nor the underwriter, are offering to sell or seeking offers to purchase these securities in any jurisdiction where the offer or sale is not permitted. We have not done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities as to distribution of the prospectus outside of the United States.

Unless the context otherwise requires, references in this prospectus to "Plus," "the Company," "we," "us" and "our" refer to Plus Therapeutics, Inc. Our logo and all product names are our common law trademarks. Solely for convenience, trademarks and tradenames referred to in this prospectus may appear without the ® or ™ symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights, or that the applicable owner will not assert its rights, to these trademarks and tradenames.

PROSPECTUS SUMMARY

This summary contains basic information about us and this offering. Because it is a summary, it does not contain all of the information that you should consider before investing. Before you decide to invest in our common stock, you should read this entire prospectus carefully, including the section entitled "Risk Factors," and any documents incorporated by reference.

Our Business

Overview

We are a U.S. pharmaceutical company developing targeted radiotherapeutics with advanced platform technologies for central nervous system ("CNS") cancers. Our novel radioactive drug formulations and therapeutic candidates are designed to deliver safe and effective doses of radiation to tumors. To achieve this, we have developed innovative approaches to drug formulation, including encapsulating radionuclides such as rhenium isotopes with nanoliposomes and microspheres. Our formulations are intended to achieve elevated patient absorbed radiation doses and extend retention times such that the clearance of the isotope occurs after significant and essentially complete radiation decay, which will contribute and provide less normal tissue/organ exposure and improved safety margins.

Traditional approaches to radiation therapy for cancer such as external beam radiation have many disadvantages including continuous treatment for four-to-six weeks (which is onerous for patients), that the radiation damages healthy cells and tissue, and that the amount of radiation delivered is very limited and, therefore, is frequently inadequate to fully destroy the cancer.

Our targeted radiotherapeutic platform and unique investigational drugs have the potential to overcome these disadvantages by directing higher, more powerful radiation doses at the tumor—and only the tumor—potentially in a single treatment. By minimizing radiation exposure to healthy tissues while simultaneously maximizing locoregional delivery and, thereby, efficacy, we hope to reduce the radiation toxicity for patients, improving their quality of life and life expectancy. Our radiotherapeutic platform, combined with advances in surgery, nuclear medicine, interventional radiology, and radiation oncology, affords us the opportunity to target a broad variety of cancer types.

Our lead radiotherapeutic candidate, rhenium (186Re) obisbemeda (formerly "186RNL"), is designed specifically for CNS cancers including recurrent glioblastoma ("GBM"), leptomeningeal metastases ("LM"), and pediatric brain cancers ("PBC") by direct localized delivery utilizing approved standard-of-care tissue access such as with convection-enhanced delivery ("CED") and intraventricular brain (Ommaya reservoir) catheters. Our acquired radiotherapeutic candidate, Rhenium-188 NanoLiposome Biodegradable Alginate Microsphere ("188RNL-BAM") is designed to treat many solid organ cancers including primary and secondary liver cancers by intra-arterial injection.

Our headquarters and manufacturing facilities are in Texas and are in proximity to world-class cancer institutions and researchers. Our dedicated team of engineers, physicians, scientists, and other professionals are committed to advancing our targeted radiotherapeutic technology for the benefit of cancer patients and healthcare providers worldwide and our current pipeline is focused on treating rare and difficult-to-treat cancers with significant unmet medical needs.

In addition to our headquarters in Austin, we have an established, GMP-validated research and development and manufacturing facility in San Antonio, Texas, tailored to produce Current Good Manufacturing Practice ("cGMP") rhenium (186Re) obisbemeda. We have built a robust supply chain through strategic partnerships that

enable the development, manufacturing and future potential commercialization of our products. Our current supply chain and key partners are positioned to supply cGMP rhenium (186Re) obisbemeda for ongoing and planned Phase 2 and Phase 3 clinical trials in patients with GBM, LM and PBC.

Pipeline

Our most advanced investigational drug, rhenium (186Re) obisbemeda, is a patented radiotherapy potentially useful for patients with CNS and other cancers. Preclinical study data describing the use of rhenium (186Re) obisbemeda for several cancer targets have been published in peer-reviewed journals and reported at a variety of medical society peer-reviewed meetings. Besides, GBM, LM and PBC, rhenium (186Re) obisbemeda has been reported to have potential applications for head and neck cancer, ovarian cancer, breast cancer and peritoneal metastases.

The rhenium (186Re) obisbemeda technology was part of a licensed radiotherapeutic portfolio that we acquired from NanoTx, Corp. on May 7, 2020. The licensed radiotherapeutic has been evaluated in preclinical studies for several cancer targets and we have an active $3.0 million award from U.S. National Institutes of Health/National Cancer Institute which is expected to provide financial support for the continued clinical development of rhenium (186Re) obisbemeda for recurrent GBM through the completion of a Phase 2 clinical trial including enrollment of up to 55 patients.

On August 29, 2022, we announced feedback from a Type C meeting with the U.S. Food and Drug Administration (the "FDA") regarding Chemistry, Manufacturing and Controls ("CMC") practices. The meeting focused on our cGMP clinical and commercial manufacturing process for our lead investigational targeted radiotherapeutic, BMEDA-chelated rhenium (186Re) obisbemeda, for recurrent GBM.

The FDA indicated agreement with our proposed application of cGMP guidance for radiotherapeutics, small molecule drug products and liposome drug products for our novel rhenium (186Re) obisbemeda in support of ongoing and future GBM clinical trials, manufacturing scale up, and commercialization. Alignment with the FDA includes support of our proposed controls and release strategy for new drug substance and new drug product. Because this product is identical for recurrent GBM, LM, and PBC, we believe alignment will be consistent for rhenium (186Re) obisbemeda used in other clinical development programs, including LM and PBC.

Rhenium (186Re) obisbemeda versus External Beam Radiation Therapy for Recurrent GBM

Rhenium (186Re) obisbemeda is a novel injectable radiotherapy designed to deliver targeted, high dose radiation directly into GBM tumors in a safe, effective, and convenient manner that may ultimately prolong patient survival. Rhenium (186Re) obisbemeda is composed of the radionuclide Rhenium-186 and a nanoliposomal carrier, and is infused in a highly targeted, controlled fashion, directly into the tumor via precision brain mapping and CED catheters. Potential benefits of rhenium (186Re) obisbemeda compared to standard external beam radiotherapy include:

- The rhenium (186Re) obisbemeda radiation dose delivered to patients may be up to 20 times greater than what is possible with commonly used external beam radiation therapy ("EBRT"), which, unlike EBRT and proton beam devices, spares normal tissue and the brain from radiation exposure.
- Rhenium (186Re) obisbemeda can be visualized in real-time during administration, possibly giving clinicians better control of radiation dosing, distribution and retention.
- Rhenium (186Re) obisbemeda potentially more effectively treats a bulk tumor and microscopic disease that has already invaded healthy tissue.
- Rhenium (186Re) obisbemeda is infused directly into the targeted tumor by CED catheter insertion using MRI guided software to avoid critical patient neurological structures and neural pathways and

also bypasses the blood brain barrier, which delivers the therapeutic product where it is needed. Importantly, it reduces radiation exposure to healthy cells, in contrast to EBRT which passes through normal tissue to reach the tumor, continuing its path through the tumor, hence being less targeted and selective.

- Rhenium (186Re) obisbemeda is given during a single, short, in-patient hospital visit, and is available in all hospitals with nuclear medicine and neurosurgery, while EBRT requires out-patient visits five days a week for approximately four-to-six weeks.

ReSPECT-GBM Trial for Recurrent GBM

Recurrent GBM is the most common, complex, and aggressive primary brain cancer in adults. In the U.S., there are more than 13,000 GBM cases diagnosed and approximately 10,000 patients succumb to the disease each year. The average length of overall survival ("OS") for GBM patients is eight months, with a one-year survival rate of 40.8% and a five-year survival rate of only 6.8% and these estimates vary and are lower in some publications. GBM routinely presents with headaches, seizures, vision changes and other significant neurological complications, with a significant compromise in quality of life. Despite the best available medical treatments, the disease remains incurable. Even after efforts to manage the presenting signs and symptoms and completely resect the initial brain tumor, some microscopic disease almost always remains and tumor regrowth occurs within months. Approximately 90% or more of patients with primary GBM experience tumor recurrence. Complete surgical removal of GBM is usually not possible and GBM is often resistant or quickly develops resistance to most available current and investigational therapies. Even today, the treatment of GBM remains a significant challenge and it has been nearly a decade since the FDA approved a new therapy for this disease, and these more recent approvals have not improved GBM patients' OS over past decades, and significant unmet medical need persists.

For recurrent GBM, there are few currently approved treatments, which in the aggregate, provide only marginal survival benefit. Furthermore, these therapies are associated with significant side effects, which limit dosing and prolonged use.

While EBRT has been shown to be safe and has temporary efficacy in many malignancies, including GBM, typically at absorbed, fractionated radiation dose of ~30 Gray in GBM, this maximum possible administered dose is always limited by toxicity to the normal tissues surrounding the malignancy, and because EBRT requires fractionation to manage toxicity and maximum EBRT limits are typically reached before long-term efficacy reached. Because of this limitation, EBRT cannot provide a cure or long term control of GBM and GBM always recurs within months after EBRT. In contrast, locally delivered and targeted radiopharmaceuticals that precisely deliver radiation in the form of beta particles such as Iodine-131 for thyroid cancer, are known to be safe and effective and minimize exposure to normal cells and tissues especially with optimal administered dose and minimizing exposure to normal tissue. The locally delivered rhenium (186Re) obisbemeda is designed for and provides patient tolerability and safety. Though no rhenium (186Re) obisbemeda head-to-head trial with chemo, immune, EBRT or systemic radiopharmaceutical products have been conducted, patient tolerability and safety considerations have been reported as expected.

Interim results from our ongoing Phase 1/2a ReSPECT-GBM trial (ClinicalTrials.gov NCT01906385) show that the beta particle energy from our lead investigational drug rhenium (186Re) obisbemeda has provided preliminary positive data and utility in treating GBM and potential other malignancies. More specifically, the preliminary data from our Phase 1/2a ReSPECT-GBM trial suggests that radiation, in the form of high energy beta particles or electrons, can be effective against GBM. Thus far, we have been able to deliver up to 740 Gy of absorbed radiation to tumor tissue in humans, without significant or dose limiting toxicities and with what we believe has the capability to go higher if required. In comparison, current EBRT protocols for recurrent GBM typically recommend a total maximum radiation dose of about ~30-35 Gray.

In September 2020, the FDA granted both Orphan Drug designation and Fast Track designations to rhenium (186Re) obisbemeda for the treatment of patients with GBM. In November 2021, the FDA granted Fast Track designation for rhenium (186Re) obisbemeda for the treatment of LM.

Rhenium (186Re) obisbemeda is under clinical investigation in a multicenter, sequential cohort, open-label, volume and dose escalation study of the safety, tolerability, and distribution of rhenium (186Re) obisbemeda given by CED catheters to patients with recurrent or progressive malignant glioma after standard surgical, radiation, and/or chemotherapy treatment (NCT01906385). The study uses a standard, modified 3x3 Fibonacci dose escalation, followed by a planned Phase 2 expansion trial at the maximum tolerated dose ("MTD")/maximum feasible dose ("MFD") or non-dose limiting toxicity ("DLT") if MTD is not reached, to determine efficacy. The trial is funded through Phase 2 in large part by a NIH/NCI grant. These investigations have not reached DLT or MTD/MFD and the study is in its eighth dosing administration cohort. Due to the observation of a preliminary efficacy signal, we have initiated in parallel a Phase 2, non-DLT dose trial pursuant to the currently funded NIH/NCI grant. This trial will begin at the current non-DLT rhenium (186Re) obisbemeda dose and will expand exploring higher radiation doses in larger volumes to treat larger tumors. Additionally, two or more rhenium (186Re) obisbemeda administrations, if indicated, will be evaluated, and reviewed with the FDA, as well as expanded safety, imaging and efficacy data to support a planned future registrational trial.

On September 6, 2022, we announced a summary of our Type C clinical meeting with the FDA that focused on the ReSPECT-GBM trial. The FDA agreed with us that the ReSPECT-GBM clinical trial should proceed to the planned Phase 2. The key focus areas of clinical investigation of the Phase 2 trial will be (1) further dose exploration, including both increased dosing and multiple doses, and (2) collecting additional safety and efficacy data to inform the design of a future registrational trial. Because no DLT administered doses were observed, the FDA and we also agreed to continue to dose cohort eight. There was further agreement with the FDA that in a planned future registrational trial, overall survival should be used as the primary endpoint. We agreed with the FDA to hold future meeting(s) to consider the use of external data to augment the use of a control arm in the registrational trial.

On January 18, 2023, we announced that the first patient has been dosed in the ReSPECT-GBM Phase 2b dose expansion clinical trial evaluating rhenium obisbemeda for the treatment of recurrent GBM. The Phase 2b trial is expected to enroll up to 31 total patients with small- to medium-sized tumors in approximately 24 months.

In June 2023, we presented data regarding the safety and feasibility results from our Phase 1/2 Clinical Trial of 186RNL (Rhenium-186 Nanoliposome) (186) Obisbemeda in Recurrent Glioma: The ReSPECT-GBM Trial at the Society of Nuclear Medicine & Molecular Imaging Annual Meeting.

On March 31, 2022, we entered into a Sales Order (the "Sales Order") with Medidata Solutions, Inc. ("Medidata"), pursuant to which Medidata built a Synthetic Control Arm® ("SCA") platform that facilitates the use of historical clinical data to incorporate into our Phase 2 clinical trial of rhenium (186Re) obisbemeda in GBM. The Sales Order had a term of six months. Work under this Sales Order has been completed. As part of this collaboration, we jointly submitted with Medidata a historical clinical trials control arm methodology abstract ("HCA") to the American Society of Clinical Oncology ("ASCO") which was accepted for publication, further strengthening this collaboration and allowing applications to advance GBM development. We plan to use the HCA for breakthrough therapy designation and Phase 2 and/or a pivotal or registrational Phase 3 trial.

ReSPECT-LM Clinical Trial for LM

LM is a rare complication of cancer in which the disease spreads to the membranes (meninges) surrounding the brain and spinal cord. The incidence of LM is growing and occurs in approximately 5% or more of people with late-stage cancer, or 110,000 people in the U.S. each year. It is highly lethal with an average one-year

survival of just 7%. All solid cancers, particularly breast, lung, GI, and melanoma, have the potential to spread to the leptomeninges.

The ReSPECT-LM Phase 1 clinical trial (ClinicalTrials.gov NCT05034497) was preceded with preclinical studies in which tolerance to doses of rhenium (186Re) obisbemeda as high as 1,075 Gy were shown in animal models with LM without significant observed toxicity. Furthermore, treatment led to a marked reduction in tumor burden in both C6 and MDA-231 LM models.

Upon receiving acceptance of our Investigational New Drug application and Fast Track designation by the FDA for rhenium (186Re) obisbemeda for the treatment of LM, we initiated the trial and began screening patients for the ReSPECT-LM Phase 1 clinical trial in Q4 2021. The ReSPECT-LM is a multi-center, sequential cohort, open-label, dose escalation study evaluating the safety, tolerability, and efficacy of a single-dose application of rhenium (186Re) obisbemeda administered through intrathecal infusion to the ventricle of patients with LM after standard surgical, radiation, and/or chemotherapy treatment. The primary endpoint of the study is the incidence and severity of adverse events and dose limiting toxicities.

On September 19, 2022, we entered into a Cancer Research Grant Contract (the "CPRIT Contract"), effective as of August 31, 2022, with CPRIT, pursuant to which CPRIT will provide us a grant of up to $17.6 million (the "CPRIT Grant") over a three-year period to fund the continued development of rhenium (186Re) obisbemeda for the treatment of patients with LM through Phase 2 of the ReSPECT LM clinical trial. The CPRIT Grant is subject to customary CPRIT funding conditions, including, but not limited to, a matching fund requirement (one dollar from us for every two dollars awarded by CPRIT), revenue sharing obligations upon commercialization of rhenium (186Re) obisbemeda based on specific dollar thresholds until CPRIT receives the aggregate amount of 400% of the proceeds awarded under the CPRIT Grant, and certain reporting requirements.

Interim results showed that a single treatment with rhenium (186Re) obisbemeda showed a consistent decreased CSF tumor cell count/ml and was very well tolerated by all LM patients. Rhenium (186Re) obisbemeda is an outpatient administration and treatment and is easily and safely administered through a standard intraventricular catheter (Ommaya Reservoir), distributed promptly throughout the CSF, and with durable retention in the leptomeninges at least through day seven. All patients have shown well tolerated prompt and durable rhenium (186Re) obisbemeda distribution throughout the subarachnoid space. Cohort 3 is currently enrolling, with protocol defined FDA review to allow proceeding with Cohort 4-7 expansion after the protocol defined observation period and independent DSMB review.

A single dose of rhenium (186Re) obisbemeda at 6.6 millicurie ("mCi") in 5.0 mL, in Cohort 1, achieved absorbed doses of 18.7 to 29.0 Gy to the ventricles and cranial subarachnoid spaces, respectively. Cohort 2 has also completed with a 13.2 mCi administered dose in 5ml and was also well tolerated. Cohort 3 enrolled three patients through early April 2023 with a 26.4 mCi administered dose.

On August 10, 2023, we presented data from the ReSPECT-LM clinical trial of rhenium (186Re) obismeda at the Society for Neuro Oncology ASCO CNS Cancer Conference.

ReSPECT-PBC Clinical Trial for Pediatric Brain Cancer

The average annual age adjusted mortality rate for children aged 0-14 for malignant brain (and other CNS) tumors is 0.71/100,000, making it the most common cause of death and cancer death in this age group. The 2021 World Health Organization Classification of CNS Tumors classifies gliomas, glioneuronal tumors, and neuronal tumors into six different families: (1) adult-type diffuse gliomas; (2) pediatric-type diffuse low-grade gliomas; (3) pediatric-type diffuse high-grade gliomas ("HGG"); (4) circumscribed astrocytic gliomas; (5) glioneuronal and neuronal tumors; and (6) ependymomas.

In August 2021, we announced plans for treating pediatric brain cancer at the 2021 American Association of Neurological Surgeons Annual Scientific Meeting. In July 2021, we reported that we had received FDA feedback pertaining to a pre-IND meeting briefing package in which the FDA stated that we are not required to perform any additional preclinical or toxicology studies.

Since the initial FDA feedback and receiving important adult GBM data and experience with rhenium (186Re) obisbemeda and follow-up communications with the FDA, we plan to submit a pediatric brain tumor IND to investigate the use of rhenium (186Re) obisbemeda in two pediatric brain cancers, high-grade glioma and ependymoma, in the second or third quarter of 2023.

Pediatric high-grade gliomas can be found almost anywhere within the CNS; however, they are most commonly found within the supratentorium. The highest incidence of supratentorial, high-grade gliomas in pediatrics appears to occur in children aged 15 to 19 years, with a median age of approximately nine years. Overall, pediatric high-grade glioma confers a three-year progression free survival ("PFS") of 11 ± 3% and three-year OS of 22% ±5%. One-year PFS is as low as 40% in recent trials. Ependymomas are slow-growing central nervous system tumors that involve the ventricular system. Diagnosis is based on MRI and biopsy and survival rate depends on tumor grade and how much of the tumor can be removed. Grade II pathology was associated with significantly improved OS compared to Grade III (anaplastic) pathology (five-year OS = 71 ± 5% vs. 57 ± 10%; p = 0.026). Gross total resection compared to subtotal resection was associated with significantly improved OS (five-year OS = 75 ± 5% vs. 54 ± 8%; p = 0.002).

Overall, pediatric HGG and ependymoma are extremely difficult-to-treat pediatric brain tumors, frequently aggressive, and in recurrent settings, carry an extremely poor prognosis.

Rhenium-188 NanoLiposome Biodegradable Alginate Microsphere Technology

In January 2022, we announced that we licensed Biodegradable Alginate Microsphere ("BAM") patents and technology from The University of Texas Health Science Center at San Antonio ("UTHSA") to expand our tumor targeting capabilities and precision radiotherapeutics pipeline. We intend to combine our Rhenium NanoLiposome technology with the BAM technology to create a novel radioembolization technology. Initially, we intend to utilize the Rhenium-188 isotope, 188RNL-BAM for the intra-arterial embolization and local delivery of a high dose of targeted radiation for a variety of solid organ cancers such as hepatocellular cancer, hepatic metastases, pancreatic cancer and many others.

Preclinical data from an *ex vivo* embolization experiment in which Technetium99m-BAM was intra-arterially delivered to a bovine kidney perfusion model was presented at the recent 2021 Society of Interventional Radiology Annual Scientific Meeting. The study concluded that the technology required for radiolabeling BAM could successfully deliver, embolize and retain radiation in the target organ. 188RNL-BAM is a preclinical investigational drug we intend to further develop and move into clinical trials. Specifically, in 2022, we transferred the 188RNL-BAM technology from UTHSA, and began planning to develop the drug product, and complete early preclinical studies to support a future FDA IND submission. Our intended initial clinical target is liver cancer which is the sixth most common and third deadliest cancer worldwide. It is a rare disease with increasing U.S. annual incidence (42,000) and deaths (30,000).

Grant Agreement with CPRIT

As noted above in the LM development discussion, on September 19, 2022, we entered into a Cancer Research Grant Contract (the "CPRIT Contract"), effective as of August 31, 2022, with CPRIT, pursuant to which CPRIT will provide us a grant of up to $17.6 million (the "CPRIT Grant") over a three-year period to fund the continued development of rhenium (186Re) obisbemeda for the treatment of patients with LM. The CPRIT

(one dollar from Plus Therapeutics for every two dollars awarded by CPRIT), revenue sharing obligations upon commercialization of rhenium (186Re) obisbemeda based on specific dollar thresholds until CPRIT receives the aggregate amount of 400% of the proceeds awarded under the CPRIT Grant, and certain reporting requirements.

Recent Financings

ATM Program

On September 9, 2022, we entered into an Equity Distribution Agreement (the "September 2022 Distribution Agreement") with Canaccord Genuity LLC ("Canaccord"), pursuant to which we may issue and sell, from time to time, shares of our common stock having an aggregate offering price of up to $5,000,000, depending on market demand, with Canaccord acting as an agent for sales. Sales of our common stock may be made by any method permitted by law deemed to be an "at the market offering" as defined in Rule 415(a)(4) of the Securities Act of 1933, as amended (the "Securities Act"), including, without limitation, sales made directly on or through the Nasdaq Capital Market. Canaccord will use its commercially reasonable efforts to sell common stock requested by the Company to be sold on its behalf, consistent with Canaccord's normal trading and sales practices, under the terms and subject to the conditions set forth in the September 2022 Distribution Agreement. We have no obligation to sell any of our common stock. We may instruct Canaccord not to sell any common stock if the sales cannot be effected at or above the price designated by us from time to time and we may at any time suspend sales pursuant to the September 2022 Distribution Agreement. From January 1, 2023 through September 30, 2023, the Company issued 1,819,993 shares under the September 2022 Distribution Agreement for net proceeds of approximately $4.3 million. The Company has reached the capacity for sales of shares under the September 2022 Distribution Agreement.

The Purchase Agreement with Lincoln Park

On August 2, 2022, we entered into the Purchase Agreement with Lincoln Park Capital Fund, LLC ("Lincoln Park"), pursuant to which Lincoln Park has agreed to purchase from us up to an aggregate of $50.0 million of our common stock (subject to certain limitations) from time to time over the term of the Purchase Agreement. Also on August 2, 2022, we entered into a registration rights agreement with Lincoln Park, which we refer to in this prospectus as the Registration Rights Agreement, pursuant to which we filed with the SEC the registration statement that includes this prospectus to register for resale under the Securities Act of 1933, as amended, or the Securities Act, the shares of our common stock that have been and may be issued to Lincoln Park under the Purchase Agreement.

Under the initial registration statement relating to the Purchase Agreement, filed in 2022, (the "2022 Registration Statement") we registered 633,333 shares of our common stock comprised of: (i) 32,846 shares of our common stock that we initially issued to Lincoln Park as Initial Commitment Shares for making its irrevocable commitment to purchase shares of our common stock under the Purchase Agreement at our direction, and (ii) up to 600,486 that we had reserved for issuance and sale to Lincoln Park under the Purchase Agreement from time to time from thereafter at our determination. Under a registration statement filed in August 2023 (the "August 2023 Registration Statement"), we registered 1,500,000 shares of our common stock that we may issue and sell from time to time, at our sole discretion, to Lincoln Park under the Purchase Agreement. Under a registration statement filed in November 2023 (the "November 2023 Registration Statement", together with the 2022 Registration Statement and the August 2023 Registration statement, the "Prior Registration Statements"), we are seeking to register an additional 1,300,000 shares of our common stock that we may issue and sell from time to time, at our sole discretion, to Lincoln Park under the Purchase Agreement. As of November 21, 2023, we have issued and sold an aggregate of 677,167 shares of common stock pursuant to the Purchase Agreement and under the Prior Registration Statements.

As consideration for Lincoln Park's irrevocable commitment to purchase shares of our common stock upon the terms of and subject to satisfaction of the conditions set forth in the Purchase Agreement, we paid $125,000

in cash as an Initial Commitment Fee and issued 32,846 Commitment Shares to Lincoln Park in consideration for its commitment to purchase shares of our common stock at our direction under the Purchase Agreement. We have also agreed to pay an Additional Commitment Fee of $625,000, which we may elect to pay in cash or shares of our common stock or any combination thereof, upon our receipt of $25.0 million aggregate gross proceeds from sales of common stock to Lincoln Park under the Purchase Agreement. Through November 21, 2023, $4.2 million of common stock have been sold under the Prior Registration Statements.

Corporate Information

We were initially formed as a California general partnership in July 1996 and incorporated in the State of Delaware in May 1997. We were formerly known as Cytori Therapeutics, Inc., before that as MacroPore Biosurgery, Inc. and before that as MacroPore, Inc. On July 20, 2019 we changed our name from Cytori Therapeutics, Inc. to Plus Therapeutics, Inc. Our corporate offices are located at 4200 Marathon Blvd., Suite 200, Austin, Texas 78756. Our telephone number is (737) 255-7194. We maintain a website at www.plustherapeutics.com. The contents of our website are not part of this prospectus and the references in this prospectus and the documents we have incorporated by reference to our website do not constitute incorporation by reference into this prospectus of the information contained therein.

THE OFFERING

Shares of our common stock offered by us	[ ] shares of our common stock ([ ] shares if the underwriter exercises its over-allotment option in full)
Pre-funded warrants offered by us	We are also offering to those purchasers, if any, whose purchase of the common stock in this offering would result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or at the election of the purchaser, 9.99%) of our outstanding common stock immediately following the consummation of this offering, the opportunity to purchase, if they so choose, pre-funded warrants in lieu of the common stock that would otherwise result in ownership in excess of 4.99% (or 9.99%, as applicable) of our outstanding common stock. The purchase price of each pre-funded warrant will equal the price per share of common stock being sold to the public in this offering, minus $0.01, and the exercise price of each pre-funded warrant will be $0.01 per share. For each pre-funded warrant we sell, the number of shares of common stock we are offering will be decreased on a one-for-one basis. Each pre-funded warrant will be immediately exercisable and may be exercised at any time until exercised in full. There is no expiration date for the pre-funded warrants. To better understand the terms of the pre-funded warrants, you should carefully read the "Description of Capital Stock" section of this prospectus. You should also read the form of pre-funded warrant, which is filed as an exhibit to the registration statement that includes this prospectus.
Shares of our common stock outstanding prior to this offering (as of September 30, 2023)	4,522,656 shares of our common stock.
Shares of our common stock to be outstanding after this offering	[ ] shares of our common stock ([ ] shares if the underwriter exercises its over-allotment option in full), assuming no sale of any pre-funded warrants. To the extent pre-funded warrants are sold, it will reduce the number of shares of common stock sold in this offering on a one-for-one basis until such warrants are exercised, if ever..
Over-allotment Option'	The underwriter has an option for a period of 45 days to purchase up to additional shares of our common stock and/or pre-funded warrants to cover over-allotments, if any. The purchase price to be paid by the underwriters per additional share of common stock or pre-funded warrant shall be equal to the public

	offering price of one share of common stock or pre-funded warrant, as applicable, less the underwriting discount.
Use of proceeds	We intend to use the proceeds from this offering for working capital and general corporate purposes. See "Use of Proceeds."
Nasdaq symbol for our common stock	"PSTV"
Risk factors	This investment involves a high degree of risk. See "Risk Factors" beginning on page 11 of this prospectus for a discussion of factors you should carefully consider before deciding to invest in our securities.

Unless otherwise noted, the number of shares of common stock to be outstanding immediately after this offering is based on 4,522,656 shares outstanding as of September 30, 2023 and excludes, as of September 30, 2023:

- 78,334 shares of common stock issuable upon exercise of stock options outstanding under our equity incentive plans, with a weighted-average exercise price of $68.10 per share;
- 6,023 shares of common stock reserved for future issuance under our 2015 New Employee Incentive Plan;
- 179,640 shares of common stock reserved for future issuance under our 2020 Stock Incentive Plan;
- 398 and 27,792 shares of common stock issuable upon conversion of 1,014 shares of Series B Convertible Preferred Stock and 938 shares of Series C Preferred Stock, respectively;
- 142,733 shares of common stock issuable upon the exercise of warrants to purchase common stock, with a weighted-average exercise price of $34.10 per share; and
- up to 1,423,319 shares of our common stock available to be sold as of November 21, 2023, pursuant to the Purchase Agreement under the Prior Registration Statement, and an additional 1,300,000 shares of our common stock available to be sold if the November 2023 Registration Statement is declared effective.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before making an investment decision with respect to our securities, we urge you to carefully consider the risks described below and in the "Risk Factors" sections of our most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q, as well as our Current Reports on Form 8-K, filed with the SEC and incorporated by reference in this prospectus, and the other information contained in this prospectus. The risks and uncertainties incorporated by reference into this prospectus or described below are not the only ones we face. Additional risks and uncertainties not presently known or which we consider immaterial as of the date hereof may also materially harm our business and could result in a complete loss of your investment. If any of the matters discussed in the following risk factors were to occur, our business, financial condition, results of operations, cash flows, or prospects could be materially and adversely affected, the market price of our common stock could decline, and you could lose all or part of your investment in our securities.

Risks Related to the Offering

Our management has broad discretion over the use of the net proceeds from this offering, you may not agree with how we use the proceeds and the proceeds may not be invested successfully.

Our management has broad discretion as to the use of the net proceeds from this offering, and we could use them for purposes other than those currently contemplated. Accordingly, you rely on the judgment of our management with regard to the use of those net proceeds, and you do not have the opportunity, as part of your investment decision, to assess whether the proceeds are being used appropriately. It is possible that we may invest those net proceeds in a way that does not yield a favorable, or any, return for us. The failure of our management to use such funds effectively could have a material adverse effect on our business, financial condition, operating results and cash flows.

If you purchase our securities in this offering, you will incur immediate and substantial dilution in the book value of your shares of common stock.

You will suffer immediate and substantial dilution in the net tangible book value of the common stock you purchase in this offering. Based on the assumed public offering price of $[ ] per share, the last reported price of our common stock on the Nasdaq Capital Market on [ ], 2023, purchasers of securities in this offering will experience immediate dilution of $[ ] per share in net tangible book value of the common stock. See the section of this prospectus titled "*Dilution*" for a more detailed description of these factors.

There is no public market for any pre-funded warrants sold in this offering.

There is no established public trading market for the pre-funded warrants being sold in this offering. We will not list the pre-funded warrants on any securities exchange or nationally recognized trading system, including the Nasdaq Capital Market. Therefore, we do not expect a market to ever develop for the pre-funded warrants. Without an active market, the liquidity of the pre-funded warrants will be limited.

The pre-funded warrants are speculative in nature.

The pre-funded warrants do not confer any rights of common stock ownership on their holders, such as voting rights or the right to receive dividends, but merely represent the right to acquire shares of common stock at a fixed price. Commencing on the date of issuance, holders of pre-funded warrants may exercise their right to acquire the underlying common stock and pay the stated warrant exercise price per share.

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

Raising additional capital may cause dilution to our stockholders, including purchasers of common stock in this offering, restrict our operations or require us to relinquish rights to our technologies or current or future therapeutic candidates.

Until such time, if ever, as we can generate the cash we need from operations, we expect to finance our cash needs through a combination of private and public equity offerings, debt financings, collaborations, strategic alliances and marketing, distribution or licensing arrangements. To the extent that we raise additional capital through the sale of common stock or securities convertible into or exchangeable for common stock, the ownership interest of our shareholders will be diluted, and the terms of these new securities may include liquidation or other preferences that materially adversely affect the rights of our shareholders. Debt financing, if available, would increase our fixed payment obligations and may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends.

If we raise funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third-parties, we may have to relinquish valuable rights to our intellectual property, future revenue streams, research programs or current or future therapeutic candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds when needed, we may be required to delay, scale back or discontinue the development and commercialization of one or more of our therapeutic candidates, delay our pursuit of potential licenses or acquisitions, or grant rights to develop and market current or future therapeutic candidates that we would otherwise prefer to develop and market ourselves.

If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired.

We are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act and the rules and regulations of Nasdaq. The Sarbanes-Oxley Act requires, among other things, that we maintain effective disclosure controls and procedures and internal control over financial reporting. We must perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal controls over financial reporting in our Annual Report on Form 10-K and quarterly report on Form 10-Q, as required by Section 404 of the Sarbanes-Oxley Act.

During the quarter ended June 30, 2023, we recognized immaterial grant revenue related to reimbursable development costs incurred in the fourth quarter of 2022 and the first quarter of 2023 that were eligible for revenue recognition in those respective prior periods. These costs were eligible for reimbursement under our CPRIT Grant, but were not correctly recognized in prior period grant revenue due to management's view that insufficient progress had been made in the ReSPECT -LM clinical trial, despite no performance specific milestones in the grant outside of a reasonableness test for reimbursement of expenses. Management has concluded that the correction to grant revenue in the prior periods did not cause a material misstatement of our financial statements.

We did not have adequate controls to apply appropriate accounting principles to significant and unusual grant revenue transactions. Specifically, controls over identification of significant and/or unusual transactions requiring technical analysis were not operating effectively. Management evaluated the impact of this deficiency on our disclosure controls and procedures and concluded that the control deficiency represents a material weakness. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis.

While we will be taking remediation measures, we cannot assure investors that these measures will significantly improve or remediate the material weakness described above.

We may in the future discover additional weaknesses in our system of internal financial and accounting controls and procedures that could result in a material misstatement of our financial statements. Our internal

control over financial reporting will not prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud will be detected.

If we are not able to comply with the requirements of Section 404 of the Sarbanes-Oxley Act, or if we are unable to maintain proper and effective internal controls, we may not be able to produce timely and accurate financial statements. If that were to happen, the market price of our common stock could decline and we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities.

Furthermore, if our remediation of the material weakness is not effective, or if we experience additional material weaknesses in the future or otherwise fail to maintain an effective system of internal controls in the future, we may not be able to accurately or timely report our financial condition or results of operations, which may adversely affect investor confidence in us and, as a result, the value of our common stock.

FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated herein by reference contain forward-looking statements which are made pursuant to the safe harbor provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. Statements other than statements of historical fact, which address activities, events or developments that we "intend," "expect," "believe," "anticipate," "will," "should," "would," "could," "may," "designed," "potential," "evaluate," "progressing," proceeding," "exploring," "hopes," and similar expressions, or future conditional verbs such as "will," "should," "would," could or "may" occur in the future are forward looking statements. Such statements are based upon certain assumptions and assessments made by our management in light of their experience and their perception of historical trends, current conditions, expected future developments and other factors they believe to be appropriate.

These statements include, without limitation, statements regarding: our anticipated expenditures, including research and development, and general and administrative expenses; our strategic collaborations and license agreements, intellectual property, FDA and EMA approvals and interactions and government regulation; the potential size of the market for our product candidates; our research and development efforts; results from our pre-clinical and clinical studies and the implications of such results regarding the efficacy or safety of our product candidates; the safety profile, pathways, and efficacy of our product candidates and formulations; anticipated advantages of our product candidates over other products available in the market and being developed; the populations that will most benefit from our product candidates and indications that will be pursued with each product candidate; anticipated progress in our current and future clinical trials; plans and strategies to create novel technologies; our IP strategy; future development and/or expansion of our product candidates and therapies in our markets; sources of competition for any of our product candidates; our ability to generate product or development revenues and the sources of such revenue; our ability to effectively manage our gross profit margins; our ability to obtain and maintain regulatory approvals; expectations as to our future performance; portions of the "Liquidity and Capital Resources" section of our annual and quarterly reports filed with the SEC; our ability to fully access our equity line with Lincoln Park; our need for additional financing and the availability thereof; our ability to continue as a going concern; our ability to remain listed on the Nasdaq Capital Market; our ability to repay or refinance some or all of our outstanding indebtedness and our ability to raise capital in the future; our ability to transfer the drug product manufacture to a contract drug manufacturing organization; and the potential enhancement of our cash position through development, marketing, and licensing arrangements.

Our actual results may differ, including materially, from those anticipated in these forward-looking statements as a result of various risks and uncertainties. These risks and uncertainties include, but are not limited to, those risks discussed in this prospectus under "Risk Factors," the risks described under "Part I—Item 1A—Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2022, and under "Part II, Item 1A—Risk Factors" in our Quarterly Reports on Form 10-Q, both of which are incorporated herein by reference. We encourage you to read these risks carefully. We caution you not to place undue reliance on the forward-looking statements contained or incorporated by reference in this prospectus. These forward-looking statements speak only as of the date made. We assume no obligation or undertaking to update any forward-looking statements to reflect any changes in expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based. You should, however, review additional disclosures we make in the reports we file with the SEC.

SELECTED FINANCIAL DATA REFLECTING REVERSE STOCK SPLIT

Reverse Stock Split

On May 1, 2023, we effected a 1-for-15 reverse stock split of our common stock. The total number of outstanding shares of capital stock was amended from approximately 37,400,000 to approximately 2,493,333. The par value per common share remained unchanged. The audited financial statements of Plus Therapeutics, Inc. included in the Annual Report on Form 10-K for the year ended December 31, 2022, and the unaudited condensed financial statements included in our Quarterly Report on Form 10-Q for the period ended March 31, 2023, which are incorporated by reference into this prospectus are presented without giving effect to the reverse stock split. Except where the context otherwise requires, share numbers in this prospectus reflect the 1-for-15 reverse stock split of our common stock.

The following selected financial data has been derived from our audited financial statements included in our Annual Report on Form 10-K filed with the SEC on February 23, 2023, and our unaudited condensed financial statements included in our Quarterly Report on Form 10-Q filed with the SEC on April 20, 2023, as adjusted to reflect the reverse stock split for all periods presented. Our historical results are not indicative of the results that may be expected in the future and results of interim periods are not indicative of the results for the entire year.

AS REPORTED (in thousands, except share and per share amounts):

	Years Ended December 31,	
	2022	2021
Net loss and comprehensive loss	$ 20,275	$ 13,399
Net loss per share, basic and diluted	$ (0.77)	$ (1.11)
Weighted average common shares outstanding, basic and diluted	26,255,256	12,089,186
Common shares outstanding at year end	33,601,373	15,510,025

	Three Months Ended March 31,	
	2023	2022
	(Unaudited)	
Net loss and comprehensive loss	$ 4,805	$ 4,116
Net loss per share, basic and diluted	$ (0.14)	($0.19)
Weighted average common shares outstanding, basic and diluted	34,800,260	21,507,061
Common shares outstanding at period end	36,123,833	33,601,373

AS ADJUSTED FOR 1-FOR-15 REVERSE STOCK SPLIT (unaudited, in thousands, except share and per share amounts):

	Years Ended December 31,	
	2022	2021
	(Unaudited)	
Net loss and comprehensive loss	$ 20,275	$ 13,399
Net loss per share, basic and diluted	($ 11.58)	($ 16.63)
Weighted average common shares outstanding, basic and diluted	1,750,350	805,945
Common shares outstanding at year end	2,240,091	1,034,001

	Three Months Ended March 31,	
	2023	2022
	(Unaudited)	
Net loss and comprehensive loss	$ 20,275	$ 13,399
Net loss per share, basic and diluted	($ 8.74)	($ 9.35)
Weighted average common shares outstanding, basic and diluted	2,320,017	1,433,804
Common shares outstanding at period end	2,408,255	2,240,091

USE OF PROCEEDS

We estimate that the net proceeds we will receive from the sale of our common stock in this offering, after deducting underwriter discounts and commissions and other offering expenses payable by us and assuming no sale of any pre-funded warrants, will be approximately $[ ] million (or $[ ] million if the underwriter exercises its option to purchase additional shares in full), based on an assumed public offering price of $[ ] per share and pre-funded warrants, which was the last reported sale price of our common stock on the Nasdaq Capital Market on [ ], 2023. We expect to use any proceeds that we receive from this offering for working capital and general corporate purposes. The amounts and timing of these expenditures will depend on a number of factors, such as the timing and progress of our research and development efforts, regulatory actions affecting our product candidates and our business, technological advances and the competitive environment for our product candidates. We cannot specify with certainty all of the particular uses for the net proceeds that we will have from the offering. Accordingly, our management will have broad discretion in the application of the net proceeds. We may also use a portion of the net proceeds to acquire or invest in complementary businesses, technologies, product candidates or other intellectual property, although we have no present commitments or agreements to do so. We may use the proceeds for purposes that are not contemplated at the time of this offering. Pending use of the net proceeds as described above, we expect to invest the net proceeds in short- and intermediate-term, interest-bearing obligations, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the U.S. government.

DILUTION

If you invest in our common stock in this offering, your ownership interest may be diluted immediately depending on the difference between the public offering price per share of our common stock (assuming no pre-funded warrants are sold in this offering) and the as adjusted net tangible book value per share of our common stock immediately after this offering (assuming no pre-funded warrants are sold in this offering). After giving effect to the assumed sale of [ ] shares of our common stock to Lincoln Park pursuant to the Purchase Agreement at an assumed sale price of $[ ] per share of our common stock (which represents the closing price of our common stock on [ ], 2023) and after deducting estimated offering expenses payable by us, our as-adjusted net tangible book value as of September 30, 2023 would have been approximately $[ ] million, or $[ ] per share (assuming no pre-funded warrants are sold in this offering). This represents an immediate increase in net tangible book value of $0.23 per share to existing stockholders and an immediate dilution of $[ ] per share to new investors. The table below illustrates this per share dilution (without giving effect to any exercise by the underwriter of its option to purchase additional shares):

Assumed offering price per share		$
Historical net tangible book value per share as of September 30, 2023	$	
Increase per share attributable to this offering	$	
As adjusted net tangible book value per share after this offering		$
Dilution per share to new investors		$

The number of shares of common stock to be outstanding immediately after this offering in the table above is based on 4,522,656 shares outstanding as of September 30, 2023 and excludes, as of September 30, 2023:

- 78,334 shares of common stock issuable upon exercise of stock options outstanding under our equity incentive plans, with a weighted-average exercise price of $68.10 per share;
- 6,023 shares of common stock reserved for future issuance under our 2015 New Employee Incentive Plan;
- 179,640 shares of common stock reserved for future issuance under our 2020 Stock Incentive Plan;
- 398 and 27,792 shares of common stock issuable upon conversion of 1,014 shares of Series B Convertible Preferred Stock and 938 shares of Series C Preferred Stock, respectively;
- 142,733 shares of common stock issuable upon the exercise of warrants to purchase common stock, with a weighted-average exercise price of $34.10 per share; and
- up to 1,423,319 shares of our common stock available to be sold as of November 21, 2023, pursuant to the Purchase Agreement under the August 2023 Registration Statement, and an additional 1,300,000 shares of our common stock available to be sold if the November 2023 Registration Statement is declared effective.

MARKET PRICE OF OUR COMMON STOCK AND RELATED STOCKHOLDER MATTERS

Market Information

Our common stock is traded on the Nasdaq Capital Market under the symbol “PSTV.”

Holders

As of November 10, 2023, there were approximately 3 registered holders of our common stock. This number does not include stockholders for whom shares were held in “nominee” or “street name.”

Dividend Policy

We have never declared or paid any cash dividends on our common stock and we do not intend to pay cash dividends in the foreseeable future. We currently expect to retain any future earnings to fund the operation and expansion of our business.

DESCRIPTION OF CAPITAL STOCK

This section describes the general terms and provisions of the shares of our common stock, par value $0.001 per share, and preferred stock, par value $0.001 per share, and some of the provisions of our certificate of incorporation and bylaws and of the Delaware General Corporation Law (the "DGCL"). This description is only a summary. Our amended and restated certificate of incorporation, as amended, and our amended and restated bylaws have been filed as exhibits to our periodic reports filed with the SEC, which are incorporated by reference in this prospectus. You should read our amended and restated certificate of incorporation and our amended and restated bylaws for additional information before you buy any of our common stock, preferred stock or other securities. See "Where You Can Find More Information."

Common Stock

We are authorized to issue 100,000,000 shares of common stock. As of September 30, 2023, there were 4,522,656 shares of common stock issued and outstanding. 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 stockholders. We have not provided for cumulative voting for the election of directors in our amended and restated certificate of incorporation, as amended. This means that the holders of a majority of the shares voted can elect all of the directors then standing for election. Subject to preferences that may apply to shares of preferred stock outstanding at the time, the holders of outstanding shares of our common stock are entitled to receive dividends out of assets legally available at the times and in the amounts that our board of directors may determine from time to time. Upon our liquidation, dissolution or winding-up, the holders of common stock are entitled to share ratably in all assets remaining after payment of all liabilities and the liquidation preferences of any outstanding preferred stock. Holders of common stock have no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and nonassessable, and the shares of common stock offered, when issued, will be fully paid and nonassessable.

Preferred Stock

We are authorized to issue 5,000,000 shares of preferred stock, 1,952 shares of which were issued and outstanding as of September 30, 2023. Of this amount, (i) 13,500 shares have been designated Series A Convertible Preferred Stock, 0 shares of which are outstanding, (ii) 10,000 shares have been designated Series B Convertible Preferred Stock, 1,014 shares of which are outstanding, (iii) 7,000 shares have been designated Series C Convertible Preferred Stock, 938 shares of which are outstanding and (iv) 1 share has been designated Series F Preferred Stock, of which no share is outstanding, in each case, as of June 30, 2023.

We may issue additional shares of preferred stock, in series, with such designations, powers, preferences and other rights and qualifications, limitations or restrictions as our board of directors may authorize, without further action by our stockholders, including:

- the distinctive designation of each series and the number of shares that will constitute the series;
- the voting rights, if any, of shares of the series and the terms and conditions of the voting rights;
- the dividend rate on the shares of the series, the dates on which dividends are payable, any restriction, limitation or condition upon the payment of dividends, whether dividends will be cumulative, and the dates from and after which dividends shall accumulate;
- the prices at which, and the terms and conditions on which, the shares of the series may be redeemed, if the shares are redeemable;
- the terms and conditions of a sinking or purchase fund for the purchase or redemption of shares of the series, if such a fund is provided;

- any preferential amount payable upon shares of the series in the event of the liquidation, dissolution or winding up of, or upon the distribution of any of our assets; and

- the prices or rates of conversion or exchange at which, and the terms and conditions on which, the shares of the series may be converted or exchanged into other securities, if the shares are convertible or exchangeable.

The particular terms of any additional series of preferred stock, and the transfer agent and registrar for that series, will be described in a prospectus supplement. Any material United States federal income tax consequences and other special considerations with respect to any preferred stock offered under this prospectus will also be described in the applicable prospectus supplement.

The issuance of preferred stock could decrease the amount of earnings and assets available for distribution to holders of our common stock or adversely affect the rights and powers, including voting rights, of the holders of our common stock. The issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of our company, which could depress the market price of our common stock.

Series B Preferred Stock

Conversion. Each share of Series B Preferred Stock is convertible, at our option or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the $1,000 stated value per share of the Series B Preferred Stock by a conversion price of $2,547.74 per share. In addition, the conversion price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations or reclassifications. Subject to limited exceptions, a holder of the Series B Preferred Stock will not have the right to convert any portion of the Series B Preferred Stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 9.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent conversion of the Series B Preferred Stock, a holder of the Series B Preferred Stock will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon conversion in full of the Series B Preferred Stock.

Dividends. Holders of Series B Preferred Stock are entitled to receive dividends (on an as-if-converted-to-common-stock basis) in the same form as dividends actually paid on shares of the common stock when, as and if such dividends are paid on shares of common stock.

Voting Rights. Except as otherwise provided in the certificate of designation for the Series B Preferred Stock or as otherwise required by law, the Series B Preferred Stock has no voting rights.

Liquidation Preference. Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Series B Preferred Stock will be entitled to receive out of our assets, whether capital or surplus, an amount equal to the $1,000 stated value per share for each share of Series B Preferred Stock before any distribution or payment shall be made to the holders of any junior securities.

Redemption Rights. We are not obligated to redeem or repurchase any shares of Series B Preferred Stock. Shares of Series B Preferred Stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous fund provisions.

Series C Preferred Stock

Conversion. Each share of Series C Preferred Stock is convertible, at our option at any time, subject to certain conditions, or at the option of the holder at any time, into the number of shares of our common stock determined by dividing the $1,000 stated value per share of the Series C Preferred Stock by a conversion price of $33.75. In addition, the conversion price per share is subject to adjustment for stock dividends, distributions, subdivisions, combinations or reclassifications. Subject to limited exceptions, a holder of the Series C Preferred Stock does not have the right to convert any portion of the Series C Preferred Stock to the extent that, after giving effect to the conversion, the holder, together with its affiliates, would beneficially own in excess of 9.99% of the number of shares of our common stock outstanding immediately after giving effect to its conversion.

Anti-Dilution. Subject to certain exceptions contained in the certificate of designation for the Series C Preferred Stock, including our ability to issue securities in connection with equity awards to service providers, strategic transactions, debt financings, research and development partnerships, an equity line of credit, our "at the market" equity offering program and other customary exceptions, if we issue or sell, or are deemed to have issued or sold, any shares of common stock or Common Stock Equivalents (as defined in the certificate of designation) for a consideration per share lower than the conversion price of the Series C Preferred Stock in effect immediately prior to such issuance or sale, or deemed issuance or sale, then the conversion price of the Series C Preferred Stock then in effect will be reduced to an amount equal to such lower price pursuant to the terms of the certificate of designation.

Fundamental Transactions. In the event we effect certain mergers, consolidations, sales of substantially all of our assets, tender or exchange offers, reclassifications or share exchanges in which our common stock is effectively converted into or exchanged for other securities, cash or property, we consummate a business combination in which another person acquires 50% of the outstanding shares of our common stock, or any person or group becomes the beneficial owner of 50% of the aggregate ordinary voting power represented by our issued and outstanding common stock, then, upon any subsequent conversion of the Series C Preferred Stock, a holder of the Series C Preferred Stock will have the right to receive any shares of the acquiring corporation or other consideration it would have been entitled to receive if it had been a holder of the number of shares of common stock then issuable upon conversion in full of the Series C Preferred Stock.

Dividends. Holders of Series C Preferred Stock are entitled to receive dividends (on an as-if-converted-to-common-stock basis) in the same form as dividends actually paid on shares of the common stock when, as and if such dividends are paid on shares of common stock.

Voting Rights. Except as otherwise provided in the certificate of designation for the Series C Preferred Stock or as otherwise required by law, the Series C Preferred Stock has no voting rights.

Liquidation Preference. Upon our liquidation, dissolution or winding-up, whether voluntary or involuntary, holders of Series C Preferred Stock will be entitled to receive out of our assets, whether capital or surplus, an amount equal to the $1,000 stated value per share for each share of Series C Preferred Stock before any distribution or payment shall be made to the holders of any junior securities.

Redemption Rights. We are not obligated to redeem or repurchase any shares of Series C Preferred Stock. Shares of Series C Preferred Stock are not otherwise entitled to any redemption rights, or mandatory sinking fund or analogous fund provisions.

Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws

Certain provisions of Delaware law, our amended and restated certificate of incorporation, as amended, and our amended and restated bylaws could have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions, which are summarized below, are expected to discourage certain types of coercive takeover practices and inadequate takeover bids. These provisions are also designed, in part, to encourage persons seeking to acquire control of us to first negotiate with our board of directors.

Certificate of Incorporation and Bylaws. Our amended and restated certificate of incorporation, as amended, and amended and restated bylaws include provisions that:

- authorize the board of directors to issue, without stockholder approval, blank-check preferred stock with such designations, powers, preferences and other rights and qualifications, limitations or restrictions as our board of directors may authorize, which preferred stock could decrease the amount of earnings and assets available for distribution to holders of our common stock or adversely affect the rights and powers, including voting rights, of the holders of our common stock;
- establish advance notice requirements for stockholder nominations of directors and for stockholder proposals that can be acted on at stockholder meetings;
- limit who may call stockholder meetings;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even if less than a quorum; and
- authorize us to indemnify officers and directors against losses that they may incur in investigations and legal proceedings resulting from their services to us, which may include services in connection with takeover defense measures.

Delaware anti-takeover statute. We are subject to the provisions of Section 203 of the DGCL regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; or
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not the outstanding voting stock owned by the interested stockholder, (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to the date of the transaction, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a “business combination” includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the “interested stockholder” and an “interested stockholder” is a person who, together with affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation’s outstanding voting stock.

We expect the existence of this provision to have an anti-takeover effect with respect to transactions our board of directors does not approve in advance. We also anticipate that Section 203 may discourage business combinations or other attempts that might result in a premium over the market price for the shares of common stock held by our stockholders. The provisions of DGCL, our amended and restated certificate of incorporation, as amended, and our amended and restated bylaws could have the effect of discouraging others from attempting

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

Transfer Agent and Registrar

The transfer agent and registrar for our common stock and each class of preferred stock is Broadridge Corporate Issuer Solutions, Inc. The transfer agent's address is 1717 Arch Street, Suite 1300, Philadelphia, Pennsylvania 19103.

Listing

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

UNDERWRITING

We plan to enter into an underwriting agreement with an underwriter regarding the offering of shares of our common stock. Subject to the terms and conditions of the underwriting agreement, we have agreed to sell to the underwriter, and the underwriter has agreed to purchase, at the public offering price less the underwriting discount set forth on the cover page of this prospectus, the number of shares of common stock listed next to its name in the following table:

Underwriter	Number of Shares	Number of Pre-Funded Warrants
Total		

The underwriting agreement provides that the obligations of the underwriter to pay for and accept delivery of the shares of common stock and pre-funded warrants offered by this prospectus are subject to various conditions and representations and warranties, including the approval of certain legal matters by their counsel and other conditions specified in the underwriting agreement. The shares of common stock and pre-funded warrants are offered by the underwriter, subject to prior sale, when, as and if issued to and accepted by them.

We have agreed to indemnify the underwriter against specified liabilities, including liabilities under the Securities Act, and to contribute to payments the underwriter may be required to make in respect thereof.

Over-Allotment Option

We have granted a 45-day option to the underwriter to purchase up to an aggregate of [ ]additional shares of our common stock and/or pre-funded warrants (equal to 15% of the common stock and pre-funded warrants sold in this offering) at the public offering price per share, less underwriting discounts and commissions, set forth on the cover page of this prospectus, solely to cover over-allotments, if any. If the underwriter exercises its option in whole or in part, then they will be committed, subject to the conditions described in the underwriting agreement, to purchase the additional shares of common stock.

Discounts, Commissions and Reimbursement

The underwriter has advised us that the underwriter proposes to offer the shares of common stock and pre-funded warrants to the public at the public offering price set forth on the cover page of this prospectus. The underwriter may offer shares and/or pre-funded warrants to dealers at that price less a concession not in excess of $[ ] per share and/or pre-funded warrant, as applicable, of which up to $[ ] per share and/or pre-funded warrant, as applicable, may be reallowed to other dealers. After the initial offering to the public, the underwriter may change the offering price and other selling terms.

The following table summarizes the underwriting discount and commissions and proceeds to us before deducting our other offering expenses. This information assumes either no exercise or full exercise of the over- allotment option we granted to the underwriter.

	Per Share	Per Pre-Funded Warrant	With No Over-Allotment	With Full Over-Allotment
Public offering price	$	$	$	$
Underwriting discount (7.5%)	$	$	$	$
Proceeds, before expenses, to us	$	$	$	$
Non-accountable expense allowance (1%)	$	$	$	$

We have also agreed to pay certain expenses of the underwriter relating to this offering as set forth in the underwriting agreement, including the fees and expenses of the underwriter's legal counsel, in an amount not to exceed $125,000.

We estimate that our total expenses of this offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding underwriting discounts, commissions and reimbursements, will be approximately $[ ]

Discretionary Accounts

The underwriter does not intend to confirm sales of the securities offered hereby to any accounts over which they have discretionary authority.

Lock-Up Agreements

The company and our directors, officers and certain of our stockholders have agreed, subject to certain exceptions, for a period of [ ] months with respect to the company (or [ ] months if gross proceeds from this offering are less than $[ ] million), and for a period of [ ] months with respect to our directors, officers and certain of our stockholders, after the date of this prospectus, without the prior written consent of the underwriter, not to directly or indirectly:

- in the case of us, issue, offer, pledge, assign, encumber, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly,
- any shares of capital stock of the company or any securities convertible into or exercisable or exchangeable for shares of capital stock of the company;
- in the case of us, file or cause the filing of any registration statement under the Securities Act with respect to any shares of common stock or other capital stock or any securities convertible into or exercisable or exchangeable for our common stock or other capital stock;
- complete any offering of debt securities of the company, other than entering into a line of credit, term loan arrangement or other debt instrument with a traditional bank;
- enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of the company's securities, whether any such transaction is to be settled by delivery of shares of our common stock or such other securities, in cash or otherwise;
- sell, agree to sell, offer or sell, solicit offers to purchase, grant any call option, warrant or other right to purchase, purchase any put option or other right to sell, pledge, borrow or otherwise dispose of company's securities;
- establish or increase any "put equivalent position" or liquidate or decrease any "call equivalent position" (in each case within the meaning of Section 16 of the Exchange Act) with respect to any company security;
- make any demand for or exercise any right with respect to the registration of any company security;
- otherwise enter into any swap, derivative or other transaction or arrangement that transfers to another, in whole or in part, any economic consequence of ownership of a company security, whether or not such transaction is to be settled by delivery of company securities, other securities, cash or other consideration; or
- publicly announce an intention to do any of the foregoing.

Market Listing

Our common stock is traded on the Nasdaq Capital Market under the symbol "PSTV." There is no established trading market for the pre-funded warrants nor do we expect a market for such securities to develop. In addition, we do not intend to apply to list the pre-funded warrants on any national securities exchange or other trading market. Without an active trading market, the liquidity of the pre-funded warrants will be limited.

Price Stabilization, Short Positions and Penalty Bids

In connection with this offering, the underwriter may engage in stabilizing transactions, over-allotment transactions, syndicate-covering transactions, penalty bids and purchase to cover positions created by short sales. Stabilizing transactions permit bids to purchase shares so long as the stabilizing bids do not exceed a specified maximum, and are engaged in for the purpose of preventing or retarding a decline in the market price of the shares while this offering is in progress.

Over-allotment transactions involve sales by the underwriter of shares in excess of the number of shares the underwriter is obligated to purchase. This creates a syndicate short position in our common stock which may be either a covered short position or a "naked" short position. In a covered short position, the number of shares of common stock over-allotted by the underwriter is not greater than the number of shares of common stock that it may purchase through exercise of the over-allotment option. In a naked short position, the number of shares of common stock involved is greater than the number of shares common stock in the over-allotment option. To close out a syndicate short position, the underwriter may elect to exercise all or part of the over-allotment option. The underwriter may also elect to stabilize the price of our common stock or reduce any syndicate short position by bidding for, and purchasing, common stock in the open market.

Syndicate short covering transactions may involve purchases of shares in the open market after the distribution has been completed. In determining the source of shares to close out the short position, the underwriter will consider, among other things, the price of shares available for purchase in the open market as compared with the price at which it may purchase shares through exercise of the over-allotment option. If the underwriter sells more shares than could be covered by exercise of the over-allotment option and, therefore, has a naked short position, the naked short position can be closed out only by buying shares in the open market. A naked short position is more likely to be created if the underwriter is concerned that after pricing there could be downward pressure on the price of the shares in the open market that could adversely affect investors who purchase in this offering.

The underwriter may also impose a penalty bid. Penalty bids permit an underwriter to reclaim a selling concession from a syndicate member when the shares originally sold by that syndicate member are purchased in stabilizing or syndicate-covering transactions to cover syndicate short positions.

These stabilizing transactions, syndicate short covering transactions and penalty bids may have the effect of raising or maintaining the market price of our common stock or preventing or retarding a decline in the market price of our common stock. As a result, the price of our common stock in the open market may be higher than the price that might otherwise exist absent these activities. Neither we nor the underwriter make any representation or prediction as to the effect that the transactions described above may have on the price of our common stock. These transactions may be effected in the over-the-counter market and otherwise and, if commenced, may be discontinued at any time.

Other Relationships

From time to time, the underwriter and/or its affiliates may in the future provide investment banking, commercial banking and other various financial services for us for which they may receive customary fees. In the course of their businesses, the underwriter and its affiliates may actively trade our securities or loans for their own account

or for the accounts of customers, and, accordingly, the underwriter and its affiliates may at any time hold long or short positions in such securities or loans. Except for services provided in connection with this offering, no underwriter has provided any investment banking or other financial services to us during the 180-day period preceding the date of this prospectus and we do not expect to retain any underwriter to perform any investment banking or other financial services for at least 90 days after the date of this prospectus.

Indemnification

We have agreed to indemnify the underwriter against liabilities relating to this offering arising under the Securities Act and the Exchange Act, liabilities arising from breaches of some or all of the representations and warranties contained in the underwriting agreement, and to contribute to payments that the underwriter may be required to make for these liabilities.

Electronic Offer, Sale and Distribution of Securities

This prospectus in electronic format may be made available on websites or through other online services maintained by one or more of the underwriter or selling group members. The underwriter may agree to allocate a number of securities to selling group members for sale to their online brokerage account holders. Internet distributions will be allocated by the underwriter and selling group members making internet distributions on the same basis as other allocations. Other than this prospectus in electronic format, the information on the website of any underwriter or selling group member and any information contained in any other website maintained by an underwriter or selling group member is not part of, nor incorporated by reference into, this prospectus or the registration statement of which this prospectus forms a part, has not been approved and/or endorsed by us or any underwriter in its capacity as underwriter, and should not be relied upon by investors.

Selling Restrictions

No action has been taken in any jurisdiction (except in the United States) that would permit a public offering of our common stock or the possession, circulation or distribution of this prospectus or any other material relating to us or our common stock in any jurisdiction where action for that purpose is required. Accordingly, our common stock may not be offered or sold, directly or indirectly, and this prospectus or any other offering material or advertisements in connection with our common stock may not be distributed or published, in or from any country or jurisdiction except in compliance with applicable rules and regulations of any such country or jurisdiction.

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive, each a "Relevant Member State," with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State, or the "Relevant Implementation Date," our securities will not be offered to the public in that Relevant Member State prior to the publication of a prospectus related to those securities that has been approved by the competent authority in that Relevant Member State or, where appropriate, approved in another Relevant Member State and notified to the competent authority in that Relevant Member State, all in accordance with the Prospectus Directive, except that, with effect from and including the Relevant Implementation Date, an offer of our securities may be made to the public in that Relevant Member State at any time:

- to any legal entity that is a qualified investor as defined in the Prospectus Directive;
- to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the underwriter for any such offer; or

- in any other circumstances which do not require the publication by the issuer of a prospectus pursuant to Article 3(2) of the Prospectus Directive, provided that no such offer of the securities shall require the issuer or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer of securities to the public" in relation to any securities in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and securities to be offered so as to enable an investor to decide to purchase or subscribe for securities, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State, and the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in each Relevant Member State and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

In the United Kingdom, this document is being distributed only to, and is directed only at, and any offer subsequently made may only be directed at persons who are "qualified investors" (as defined in the Prospectus Directive) (i) who have professional experience in matters relating to investments falling within Article 19 (5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended, or the Order, and/or (ii) who are high net worth companies (or persons to whom it may otherwise be lawfully communicated) falling within Article 49(2)(a) to (d) of the Order (all such persons together, the relevant persons). This document must not be acted on or relied on in the United Kingdom by persons who are not relevant persons. In the United Kingdom, any investment or investment activity to which this document relates may be made or taken exclusively by relevant persons.

Canada

The offering of our common stock in Canada is being made on a private placement basis in reliance on exemptions from the prospectus requirements under the securities laws of each applicable Canadian province and territory where our common stock may be offered and sold, and therein may only be made with investors that are purchasing, or deemed to be purchasing, as principal and that qualify as both an "accredited investor" as such term is defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario) and as a "permitted client" as such term is defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations.* Any offer and sale of our common stock in any province or territory of Canada may only be made through a dealer that is properly registered under the securities legislation of the applicable province or territory wherein our common stock is offered and/or sold or, alternatively, where such registration is not required.

Any resale of our common stock by an investor resident in Canada must be made in accordance with applicable Canadian securities laws, which require resales be made in accordance with an exemption from, or in a transaction not subject to, prospectus requirements under applicable Canadian securities laws. These resale restrictions may under certain circumstances apply to resales of the common stock outside of Canada.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment hereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non- Canadian jurisdiction, section 3A.4) of National Instrument 33-105 *Underwriting Conflicts* ("NI 33-105"), the underwriter

is not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Upon receipt of this prospectus, each Québec investor hereby confirms that it has expressly requested that all documents evidencing or relating in any way to the sale of the securities described herein (including for greater certainty any purchase confirmation or any notice) be drawn up in the English language only. *Par la réception de ce document, chaque investisseur québecois confirme par les présentes qu'il a expressément exigé que tous les documents faisant foi ou se rapportant de quelque manière que ce soit à la vente des valeurs mobilières décrites aux présentes (incluant, pour plus de certitude, toute confirmation d'achat ou tout avis) soient rédigés en anglais seulement*.

LEGAL MATTERS

The validity of any securities offered by this prospectus will be passed upon for us by Hogan Lovells US LLP, Houston, Texas.

EXPERTS

The financial statements as of December 31, 2022 and 2021 and for the years then ended incorporated by reference in this prospectus have been so incorporated in reliance on the report of BDO USA, LLP (n/k/a BDO USA, P.C.), an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We have filed a registration statement on Form S-1 with the SEC under the Securities Act. This prospectus is part of the registration statement but the registration statement includes and incorporates by reference additional information and exhibits. We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC also maintains a web site that contains reports, proxy and information statements and other information regarding companies, such as ours, that file documents electronically with the SEC. The website address is www.sec.gov. The information on the SEC's website is not part of this prospectus, and any references to this website or any other website are inactive textual references only.

INCORPORATION BY REFERENCE

The SEC permits us to "incorporate by reference" the information contained in documents we have filed with the SEC, which means that we can disclose important information to you by referring you to those documents rather than by including them in this prospectus. Information that is incorporated by reference is considered to be part of this prospectus and you should read it with the same care that you read this prospectus. We have filed with the SEC, and incorporate by reference in this prospectus:

- our Annual Report on Form 10-K for the year ended December 31, 2022 (filed with the SEC on February 23, 2023);
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2023,June 30, 2023 and September 30, 2023 (filed with the SEC on April 20, 2023, August 14, 2023, and October 31, 2023, respectively);
- our Current Reports on Form 8-K filed with the SEC on March 3, 2023, April 21, 2023, April 28, 2023, May 16, 2023, October 31, 2023 (reporting under Item 8.01) and November 20, 2023 (reporting under Item 8.01); and
- the description of our common stock contained in our Registration Statement on Form 10/A (File No. 000-32501) filed on July 16, 2001, and any amendment or report filed with the Commission for the purpose of updating the description.

We are not, however, incorporating, in each case, any documents or information that we are deemed to furnish and not file in accordance with SEC rules.

Any statement contained in any document incorporated by reference herein will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any prospectus supplement modifies or supersedes such statement. Any statement so modified or superseded will not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

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

We will provide without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, a copy of any or all documents that are incorporated by reference into this prospectus, but not delivered with the prospectus, other than exhibits to such documents unless such exhibits are specifically incorporated by reference into the documents that this prospectus incorporates. You should direct oral or written requests by one of the following methods. Attention: Investor Relations, Plus Therapeutics, Inc., 4200 Marathon Blvd., Suite 200, Austin, TX 78756, (737) 255-7194. You may also access these documents, free of charge on the SEC's website at www.sec.gov or on the "Investors" page of our website at www.plustherapeutics.com. The information found on our website, or that may be accessed by links on our website, is not part of this prospectus. We have included our website address solely as an inactive textual reference. Investors should not rely on any such information in deciding whether to purchase our common stock.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been informed that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

[ ] Shares of Common Stock

PROSPECTUS

, 2023

PART II

Information Not Required in Prospectus

Item 13. Other Expenses of Issuance and Distribution.

The following is a statement of estimated expenses in connection with the offering described in this registration statement. All expenses incurred with respect to the registration of the common stock will be borne by us. All amounts are estimates except the SEC registration fee.

	Amount
SEC Registration Fee	$2,352
Printing Expenses	*
Legal Fees and Expenses	*
Accounting Fees and Expenses	*
Miscellaneous Expenses	*
Total	$ *

* To be filed by amendment.

Item 14. Indemnification of Directors and Officers.

Section 102 of the DGCL allows a corporation to eliminate the personal liability of directors of a corporation to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except where the director breached the duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of the DGCL or obtained an improper personal benefit.

Section 145 of the DGCL provides, among other things, that we may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding—other than an action by or in our right—by reason of the fact that the person is or was our director, officer, agent or employee, or is or was serving at our request as a director, officer, agent or employee of another corporation, partnership, joint venture, trust or other enterprise against expenses, including attorneys' fees, judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding. The power to indemnify applies (a) if such person is successful on the merits or otherwise in defense of any action, suit or proceeding, or (b) if such person acting in good faith and in a manner he or she reasonably believed to be in the best interest, or not opposed to the best interest, of us, and with respect to any criminal action or proceeding had no reasonable cause to believe his or her conduct was unlawful. The power to indemnify applies to actions brought by or in our right as well but only to the extent of defense expenses, including attorneys' fees but excluding amounts paid in settlement, actually and reasonably incurred and not to any satisfaction of judgment or settlement of the claim itself, and with the further limitation that in such actions no indemnification shall be made in the event of any adjudication of liability to us, unless the court believes that in light of all the circumstances indemnification should apply.

Section 174 of the DGCL provides, among other things, that a director who willfully or negligently approves of an unlawful payment of dividends or an unlawful stock repurchase or redemption may be held liable for such actions. A director who was either absent when the unlawful actions were approved or dissented at the time, may avoid liability by causing his or her dissent to such actions to be entered in the books containing minutes of the meetings of the board of directors at the time such action occurred or immediately after such absent director receives notice of the unlawful acts.

Our amended and restated certificate of incorporation, as amended, and amended and restated bylaws, filed as Exhibit 3.1 to our Annual Report on Form 10-K filed March 11, 2016 and Exhibit 3.1 to our Periodic Report on Form 8-K filed September 21, 2021, respectively, provide that we shall indemnify our directors, officers, employees and other agents to the fullest extent not prohibited by the DGCL or any other applicable law. In addition, we have entered into agreements to indemnify our directors and officers and expect to continue to enter into agreements to indemnify all of our directors and officers. These agreements require us, among other things, to indemnify our directors and officers against certain liabilities which may arise by reason of their status or service as directors or officers to the fullest extent not prohibited by law. These indemnification provisions and the indemnification agreements may be sufficiently broad to permit indemnification of our officers and directors for liabilities, including reimbursement of expenses incurred, arising under the Securities Act of 1933.

We maintain insurance policies under which our directors and executive officers are insured, within the limits and subject to the limitations of those policies, against certain expenses in connection with the defense of, and certain liabilities that might be imposed as a result of, actions, suits or proceedings to which they are parties by reason of being or having been directors or officers. The coverage provided by these policies may apply whether or not we would have the power to indemnify such person against such liability under the provisions of the General Corporation Law of the State of Delaware.

Item 15. Recent Sales of Unregistered Securities.

None.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits.

The exhibits to the registration statement are listed in the Exhibit Index to this registration statement and are incorporated herein by reference.

(b) Financial Statement Schedules.

Financial statement schedules

All schedules have been omitted because either they are not required, are not applicable or the information is otherwise set forth in the financial statements and related notes thereto.

Item 17. Undertakings.

The undersigned registrant hereby undertakes:

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

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

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed 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 Securities and Exchange Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price

represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

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

provided, *however*, that paragraphs (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 Securities and Exchange Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

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

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

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

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

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

(5) That, for 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.

(6) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling

person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

EXHIBIT INDEX

Exhibit No.	Exhibit Title	Filed herewith	Incorporated by Reference		
			Form	File No.	Date Filed
3.1	Composite Certificate of Incorporation		10-K	001-34375 Exhibit 3.1	03/11/2016
3.2	Certificate of Amendment to Amended and Restated Certificate of Incorporation.		8-K	001-34375 Exhibit 3.1	05/10/2016
3.3	Certificate of Amendment to Amended and Restated Certificate of Incorporation		8-K	001-34375 Exhibit 3.1	05/23/2018
3.4	Certificate of Amendment to Amended and Restated Certificate of Incorporation.		8-K	001-34375 Exhibit 3.1	07/29/2019
3.5	Certificate of Amendment to Amended and Restated Certificate of Incorporation.		8-K	001-34375 Exhibit 3.1	08/06/2019
3.6	Certificate of Amendment to Amended and Restated Certificate of Incorporation.		8-K	001-34375 Exhibit 3.1	04/28/2023
3.7	Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock		8-K	001-34375 Exhibit 3.1	11/28/2017
3.8	Certificate of Designation of Preferences, Rights and Limitations of Series C Convertible Preferred Stock		8-K	001-34375 Exhibit 3.1	07/25/2018
3.9	Certificate of Designation of Preferences, Rights and Limitations of Series F Convertible Preferred Stock		8-K	001-34375 Exhibit 3.1	03/03/2023
3.10	Amended and Restated Bylaws of Plus Therapeutics, Inc.		8-K	001-34375 Exhibit 3.1	09/21/2021
4.1	Description of Securities		10-K	001-34375 Exhibit 4.1	03/30/2020
4.2	Form of Common Stock Certificate		10-K	001-34375 Exhibit 4.33	03/09/2018
5.1	Opinion of Hogan Lovells US LLP*				
10.1	Purchase Agreement between Plus Therapeutics, Inc. and Lincoln Park Capital Fund, LLC, dated August 2, 2022.		8-K	011-34375 Exhibit 10.1	08/08/2022
10.2	Registration Rights Agreement between Plus Therapeutics, Inc. and Lincoln Park Capital Fund, LLC, dated August 2, 2022.		8-K	011-34375 Exhibit 10.2	08/08/2022
10.3+	Patent and Know-How License Agreement, dated March 29, 2020, by and between Plus Therapeutics, Inc. and NanoTx, Corp.		8-K	011-34375 Exhibit 10.1	3/30/2020

10.4+	Patent & Technology License Agreement, dated December 31, 2021, between Plus Therapeutics, Inc. and the University of Texas Health Science Center at San Antonio	10-K	001-34375 Exhibit 10.2	02/24/2022
10.5	Distribution Agreement, dated January 14, 2022, by and among Plus Therapeutics, Inc. and Canaccord Genuity LLC	8-K	011-34375 Exhibit 1.1	1/14/2022
10.6	Loan and Security Agreement, dated May 29, 2015, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	10-Q	001-34375 Exhibit 10.4	08/10/2015
10.7	First Amendment to Loan and Security Agreement, dated September 20, 2017, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	S-1/A	333-219967 Exhibit 10.45	10/03/2017
10.8	Second Amendment to Loan and Security Agreement, dated June 19, 2018, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	10-Q	001-34375 Exhibit 10.3	08/14/2018
10.9	Third Amendment to Loan and Security Agreement, dated August 31, 2018, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	S-1	333-227485 Exhibit 10.51	09/21/2018
10.10	Fourth Amendment to Loan and Security Agreement dated December 31, 2018, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	S-1	333-229485 Exhibit 10.52	02/01/2019
10.11	Fifth Amendment to Loan and Security Agreement dated February 13, 2019, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	10-K	001-34375 Exhibit 10.55	03/29/2019
10.12	Sixth Amendment to Loan and Security Agreement dated March 4, 2019, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	10-K	001-34375 Exhibit 10.56	03/29/2019
10.13	Seventh Amendment to Loan and Security Agreement dated April 24, 2019, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	10-Q	001-34375 Exhibit 10.3	05/14/2019
10.14	Eighth Amendment to Loan and Security Agreement dated July 15, 2019, by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	10-Q	001-34375 Exhibit 10.2	08/15/2019
10.15+	Ninth Amendment to Loan and Security Agreement, dated March 29, 2020 by and between Plus Therapeutics, Inc. and Oxford Finance, LLC	8-K	011-34375 Exhibit 10.2	3/30/2020
10.16#	Amended and Restated Employment Agreement between Marc Hedrick and Plus Therapeutics, Inc.	10-Q	001-34375 Exhibit 10.6	5/16/2020
10.17#	Amended and Restated Employment Agreement between Andrew Sims and Plus Therapeutics, Inc.	10-Q	001-34375 Exhibit 10.7	5/16/2020
10.18#	Employment Agreement between Norman LaFrance and Plus Therapeutics, Inc.	8-K	001-34375 Exhibit 10.1	09/13/2021
10.19#	2015 New Employee Incentive Plan	8-K	001-34375 Exhibit 10.1	01/05/2016

10.20#	First Amendment to the Plus Therapeutics, Inc. 2015 New Employee Incentive Plan, dated Jan. 26, 2017		10-K	001-34375 Exhibit 10.42	03/24/2017
10.21#	Second Amendment to the Plus Therapeutics, Inc. 2015 New Employee Incentive Plan, dated February 6, 2020		10-K	001-34375 Exhibit 10.25	03/30/2020
10.22#	Form of Notice of Grant of Stock Option under the 2015 New Employee Incentive Plan		S-8	333-210211 Exhibit 99.5	03/15/2016
10.23#	Form of Stock Option Agreement under the 2015 New Employee Incentive Plan		S-8	333-210211 Exhibit 99.4	03/15/2016
10.24#	Form of Notice of Grant and Stock Option Agreement under the 2020 Stock Incentive Plan.		10-K	001-34375 Exhibit 10.26	02/24/2022
10.25#	2020 Stock Incentive Plan (as further amended and restated)		8-K	001-34375 Exhibit 10.1	04/21/2023
10.26+	Master Services Agreement between Piramal Pharma Solutions, Inc. and Plus Therapeutics, Inc.		10-K	001-334275 Exhibit 10.24	02/22/2021
10.27#	Form Indemnification Agreement		8-K	001-34375 Exhibit 10.1	02/06/2020
10.28	Subscription and Investment Representation Agreement, dated March 3, 2023, by and between Plus Therapeutics, Inc. and the purchaser signatory thereto		8-K	001-34375 Exhibit 10.1	03/03/2023
23.1	Consent of BDO USA, P.C., Independent Registered Public Accounting Firm	X			
23.2	Consent of Hogan Lovells US LLP (included in Exhibit 5.1)*				
24.1	Power of Attorney (see signature page)	X			
107	Fee Table	X			

# Indicates management contract or compensatory plan or arrangement.
+ Portions of this exhibit have been excluded pursuant to Item 601(b)(1)(iv).
* To be filed by amendment.

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 Austin, State of Texas, on November 22, 2023.

PLUS THERAPEUTICS, INC.

By: /s/ Marc H. Hedrick, MD
Marc H. Hedrick, MD
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Marc H. Hedrick, MD and Andrew Sims, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power of substitution and re-substitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments, including post-effective amendments, to this Registration Statement, and any registration statement relating to the offering covered by this Registration Statement and filed pursuant to Rule 462(b) under the Securities Act of 1933, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that each of said attorneys in fact and agents 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.

Name	Title	Date
/s/ Marc H. Hedrick, MD Marc H. Hedrick, MD	President and Chief Executive Officer and Director *(Principal Executive Officer)*	November 22, 2023
/s/ Andrew Sims Andrew Sims	Chief Financial Officer *(Principal Financial Officer and Principal Accounting Officer)*	November 22, 2023
/s/ Richard J. Hawkins Richard J. Hawkins	Chairman of the Board	November 22, 2023
/s/ Howard Clowes Howard Clowes	Director	November 22, 2023
/s/ An van Es-Johansson, MD An van Es-Johansson, MD	Director	November 22, 2023
/s/ Robert Lenk, Ph.D. Robert Lenk, Ph.D.	Director	November 22, 2023
/s/ Greg Petersen Greg Petersen	Director	November 22, 2023

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Plus Therapeutics, Inc.
Austin, Texas

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated February 23, 2023, relating to the financial statements of Plus Therapeutics, Inc. (the "Company") appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2022.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO USA, P.C.

Austin, Texas
November 22, 2023

Exhibit 107

Calculation of Filing Fee Tables

Form S-1
(Form Type)

Plus Therapeutics, Inc.
(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

	Security Type	Security Class	Fee Calculation or Carry Forward Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price[1][2][7]	Fee Rate	Amount of Registration Fee
Fees to be Paid	Equity	Common Stock, $0.001 par value per share[7]	457(o)	—	—	$15,000,000	0.0001476	$2,214
Fees to be Paid	Equity	Pre-funded warrants to purchase Common Stock, $0.001 par value per share[4][7][8]	457(g)	—	—	—	—	—
Fees to be Paid	Equity	Common Stock, $0.001 par value per share underlying the Pre-funded warrants[5][7][8]	Other	—	—	—	—	—
Fees to be Paid	Equity	Underwriter's Warrants to Purchase Common Stock, $0.001 par value per share[3][4]	457(g)	—	—	—	—	—
Fees to be Paid	Equity	Common Stock, $0.001 par value per share underlying the Underwriter's Warrants[5][6]	457(o)	—	—	$937,500	0.0001476	$138.38
				Total Offering Amounts		$15,937,500		$2,352.38
				Total Fees Previously Paid				$0
				Net Fee Due				$2,352.38

(1) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended (the "Securities Act").

(2) Includes the aggregate offering price of additional shares that the underwriter has the option to purchase pursuant to its over-allotment option.

(3) We have agreed to issue to the underwriter warrants to purchase the number of shares of our common stock (the "Underwriter's Warrants") in the aggregate equal to five percent (5%) of the shares of our common stock to be issued and sold in this offering, including upon exercise the option to purchase additional securities.

(4) No registration fee is required pursuant to Rule 457(g) under the Securities Act.

(5) In addition to the common stock set forth in this table, pursuant to Rule 416 under the Securities Act, this registration statement also registers such indeterminate number of common stock as may become issuable upon exercise of the Underwriter's Warrants and pre-funded warrants.

(6) The Underwriter's Warrants are exercisable for a price per share equal to 125% of the public offering price in this offering. As estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(g), the proposed maximum aggregate offering price of the Representative's Warrants is $937,500, which is equal to 125% of $750,000 (5% of the proposed maximum aggregate offering price of $15,000,000).

(7) The proposed maximum aggregate offering price of the common stock proposed to be sold in the offering will be reduced on a dollar-for-dollar basis based on the offering price of any pre-funded warrants offered and sold in the offering, and as such the proposed maximum offering price of the common stock and pre-funded warrants (including the common stock issuable upon exercise of the pre-funded warrants) if any, is $15,000,000.

(8) The registrant may issue pre-funded warrants to purchase common stock in the offering. The purchase price of each pre-funded warrant will equal the price per share at which shares of common stock are being sold to the public in this offering, minus $0.01, which constitutes the pre-funded portion of the exercise price, and the remaining unpaid exercise price of the pre-funded warrant will equal $0.01 per share (subject to adjustment as provided for therein).